Vol. 120, No. 14

PAPER TRADE JOURNAL.

Title Reg. U. S. Pat. Off.

April 5, 1945

Form Over-All Advisory Paper Committee

Will Be Group With Which OPA Can Consult On Matters of An Industry-Wide Nature — Includes Officials of Fifteen Large and Small and Integrated and Non-Integrated Manufacturing Concerns.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 4, 1945—Formation of an over-all advisory committee for the pulp and paper industry was announced by the Office of Price Administration today.

Committee to Meet April 18

Initial meeting of the group has been set for April 18, in Washington, D. C. At this meeting a general discussion is planned on the present situation of the industry under price control, and what particular problems exist or are expected to occur in the future, including the period after Victory-in-Europe Day. J. R. Atwater, price executive of the Paper and Paper Products Branch in OPA's national office, will preside.

Comprising the committee will be officials of 15 manufacturing concerns including large and small companies as well as integrated and non-integrated concerns.

This committee will not replace any of the 26 industry advisory committees already in existence, representing the manufacturers of specific products in the pulp and paper industry. It has been formed for the purpose of having one over-all industry group with which OPA can consult on matters of an industry-wide nature.

The need for such a committee has been felt for some time both by OPA and by the industry, OPA said. Consequently, when its formation was suggested by certain members of the Industry through the American Pulp and Paper Association, the idea received prompt agreement from OPA.

Members of the Committee

The committee follows:

H. S. Daniels, Union Bag and Paper Corporation, New York, N. Y.

Grafton Houston, Fort Howard Paper Company, Green Bay, Wis.

Malcolm Lowe, Lowe Paper Company, Ridgefield, N. J.

John L. Riegel, Riegel Paper Corporation, New York, N. Y.

Harold Smith, Maine Seaboard Paper Company, New York, N. Y.

H. R. Weaver, International Paper Company, New York, N. Y.

Vasco E. Nunez, Nashua Gummed and Coated Paper Company, Nashua, N. H.

W. J. Dixon, St. Regis Paper Company, New York, N. Y.

V. C. Hobbs, Fibreboard Products, Inc. San Francisco, Cal.

Rex Hovey, Oxford Paper Company, New York, N. Y.

W. Irving Osborne, Jr., Cornell Wood Products Company, Chicago, Ill.

Arthur Schroeder, Pejepscot Paper Company, New York, N. Y.

D. L. Stocker, Michigan Paper Company of Plainwell, Plainwell, Mich.

J. D. Zink, Strathmore Paper Company, New York, N. Y.

J. D. Zellerbach, Crown Zellerbach Paper Corporation, San Francisco, Cal.

Newsprint Price Up $3 a Ton

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 2, 1945—Manufacturers' ceiling prices for newsprint paper will be increased $3 per ton, effective March 29, 1945, the Office of Price Administration announced today.

This increase, the first since September 1, 1943, and the third since newsprint was put under price control in March 1942, has been necessitated by increased production costs, principally for pulpwood, the chief raw material in the manufacture of newsprint, OPA said.

OPA said that these cost increases had resulted in earnings for the United States newsprint industry below a normal peacetime level and that the agency was required by the Price Control Act to grant a $3 increase in price ceilings.

The increase will lift to $61 a ton the ceiling price for standard newsprint paper delivered to 38 "port cities." There are separate ceilings for deliveries in ten specified zones of the country, and these ceilings are likewise raised $3 per ton. The ceiling price for the base zone, which is No. 4, becomes $62 a ton.

All newsprint paper sold in the United States will be governed by the new ceilings. Approximately 3,250,000 tons of newsprint were consumed in this country in 1944. On this basis, therefore, today's action would mean an increased return of approximately $10,000,000 a year to producers.

Approximately one-quarter of newsprint consumed in the United States is produced in this country, the rest coming from Canada and Newfoundland.

Today's action was taken after consultation with the Newsprint Paper Industry Advisory Committee, with individual newspaper publishers, and with representatives of the Canadian Wartime Prices and Trade Board.

Chicago Speculates at Larger Paper Exports

Second Quarter Supply of Paper For Civilians May Be Further Curtailed To Allow Larger Foreign Shipments—Western Salesmen Hold Interesting Meeting—Schools Salvage More Waste Paper.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 2, 1945—With pulp allocations 80,000 tons below those allotted for the first quarter, members of the paper industry in this area are expecting the second quarter to further sharply curtail civilian operations. Local paper sales representatives are among those who are being called upon to ship paper to foreign points and, while they would rather ship paper than pulp, they still have some wonderment concerning the equity of paper of the exporting proposals.

While the scarcities ran all down the line, there was a lot of emphasis placed on the reports from Chicago that orders for folding boxes in the first two months of 1945 pushed upward to a point more than 30% ahead of December with current orders showing that this increase will soon be surpassed. Local officials from the folding box industry further commented that while shipments have been held to record levels the backlog of unfilled orders has been maintained.

It is understood locally that merchants in the Chicago area have adopted a policy with reference to Christmas boxes which will be similar to last year and which urges the use of ordinary white boxes rather than any attempt to emphasize color or "trimmings" of any kind.

The waste paper supply situation has improved somewhat with warmer weather and record salvage programs in this area.

Western Salesmen Meet

Reports indicate that the western division of the Salesmen's Association of the Paper Industry held a most successful luncheon meeting at the Sherman Hotel on March 26. Present as honored guests was Sergeant Samuel Shore from Vaughan Military Hospital and four veterans, now being brought up to par at the famous hospital which houses 1500 patients. The Sergeant explained how the hospital was designed to build up wounded veterans through calisthenics, exercises, occupational educational programs and in other ways. The four veterans then, in most interesting fashion, described their war careers and told how they had received the wounds which sent them off the firing line.

At the close of the session, while members were expectantly waiting for the door prize drawing which is a weekly luncheon feature, five names were drawn from the hat. Surprisingly enough, all five winners were the Sergeant and his four companions!

As a second part of the program, Courtney Reeves, Allied Paper Company executive and a past president of the association, presented Burt Fisher, Bergstrom Paper Company and retiring president of the association, with a handsome wrist watch as a token of the esteem in which he is held by the members. Mr. Fisher, obviously touched by the sincere expression, made a brief acceptance speech to ring down the curtain on an outstanding meeting for the western division.

Schools Break Salvage Record

Chicago's public schools this week broke all previous records by collecting 4113 tons of waste paper. An additional 175 tons is expected from three schools which have not yet reported.

Elementary schools, which held a five week campaign, collected an average of 1,300,270 pounds of paper each week as compared to their best previous mark of an average of 1,081,000 tons a week in the six week drive that ended a month ago. Thirty-six high schools reported a total of 1,726,000 pounds collected in one day campaigns, breaking the record set in January when 1,470,000 pounds set the then new record.

The fifty elementary school pupils who led the city in paper salvage will receive gold medals from the Chicago waste paper campaign committee of which J. E. Marcus of the local waste paper industry is the chairman. The fifty leading schools will get War Production Board citations. Each high school that collected 50,000 pounds of paper will receive special WPB citations as well. U. J. R. Robinson, chairman of the waste paper salvage committee, attributed the results from the school campaign to the excellent organization and spirit shown by both teachers and pupils. He pointed out that Chicago schools with only a third as many pupils as New York, led the nation in paper salvage last year and that it "looked as though they would again be the leaders."

Moves Into Larger Offices

Among the spring movers in the city was the Bulkley, Dunton Pulp Company, which recently transferred its Chicago and regional headquarters to more commodious quarters at 120 S. LaSalle street. Offices were formerly at 80 E. Jackson boulevard. L. W. Lawrence continues in charge of the Chicago and regional operations.

Goes to Schwarz Paper Co.

The weekly bulletin of the western division, Salesmen's Association of the Paper Industry, calls attention to the fact that Jack Burruss, well known paper sales executive, formerly sales manager of the Crossett Paper Mills is now associated with the Schwarz Paper Company of this city.

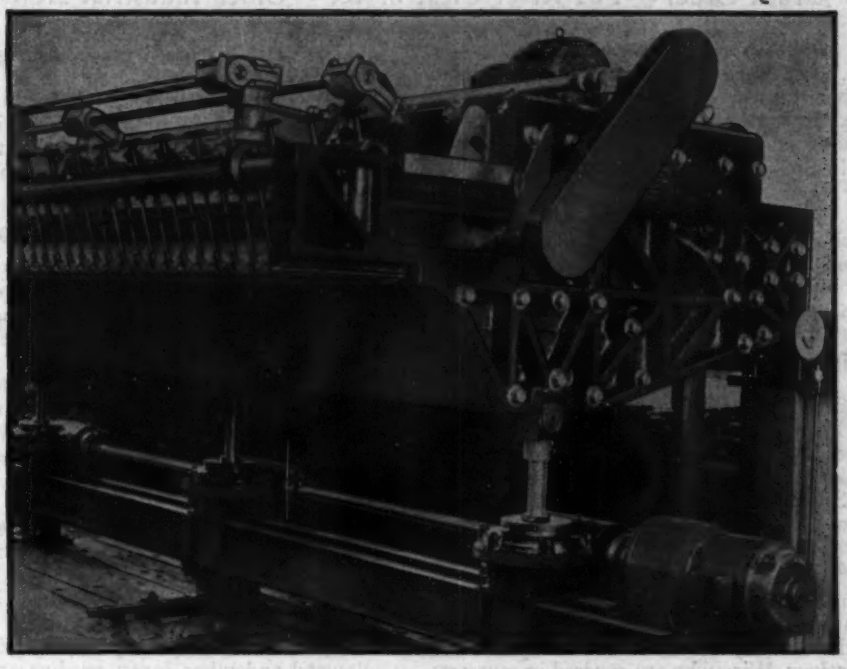
D. D. Pascal Made Manager

D. D. Pascal has been appointed manager of the mid-western division of the National Starch Products, Inc. Mr. Pascal has been with his present interests for nearly fifteen years, being identified with virtually all operations of the company at one time or other. His most recent work, prior to his coming to the Chicago offices at Washtenaw and Thirty-sixth streets, was as technical assistant to the vice president in charge of sales.

Arthur D. Little, Inc. Adds to Staff

Dr. W. B. Pings, organic chemist, has recently joined the staff of Arthur D. Little, Inc., Cambridge, Massachusetts, industrial research organization. Dr. Pings was previously at the Experimental Station of E. I. du Pont de Nemours & Co. at Wilmington, Del.

PUMPING STOCK ONTO THE WIRE



Significant and interesting — though strictly for future installation — is Valley's Pressure Inlet pictured above. On Inlets such as this, paper is made at a speed considered impossible a few years ago. This Inlet is the "nozzle" of a high pressure, stock entrance system, currently confined to light weight, high-speed, free sheets. Write us concerning this or other Valley Inlets to meet your requirements.

VALLEY
IRON WORKS COMPANY
APPLETON, WISCONSIN

Slices and Head Boxes • Screw Presses • Micro-Mist Spray Dampeners • Laboratory Equipment
Pulp Washing Systems • High-Speed Beaters • Breaker Beaters • Vortex Beaters • Plug Valves
Flat and Rotary Screens • Thickeners • Deckers • Paper Markers • Roll-Headers

News of the Wisconsin Paper Industry

Regional Labor Board Announces Decisions—Thilmany Co. Chemist Discusses Growth of Paper Industry — OPA Eases Pulpwood Truck Order — Fox River Clear of Ice — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 2, 1945—The Sixth Regional War Labor board last week approved a labor contract between the George A. Whiting Paper Company, Menasha, Wis., and the International Brotherhood of Paper Makers, involving a general increase of 3 cents per hour for all hourly paid employees, according to E. B. Lambton, Appleton, Wis., regional representative of the union.

In addition, he said, a number of adjustments in hourly rates over the 3 cents for specific job classifications were approved. Employees also secured an improvement in their situation when wires are changed on paper machines and when they are called back to the job after they have ended their day's work, Mr. Lambton stated.

Also approved were vacations with pay of one week for employees with from one to five years service and two weeks for employees with five years and over of service. Stipulations of the contract were reported retroactive to October 1, 1944.

Wausau Workers Get Pay Rise

The Sixth Region War Labor Board announced last week in Chicago at 2-cent general increase for 325 production employees of Wausau Paper Mills Company, Brokaw, Wis., who are covered in contracts between the company and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, and the International Brotherhood of Paper Makers. The increase is retroactive to last January 8.

Folke Becker Heads Fund Drive

Announcement was made last week of the appointment of Folke Becker, president and general manager of the Rhinelander Paper Company, Rhinelander, Wis., as state chairman of the 1945 campaign to raise $117,000 in Wisconsin to combat cancer. The drive, sponsored by the American Cancer Society, will be held in April and May.

Discusses Rise of Paper Industry

The history and development of the paper industry was discussed Wednesday noon, March 28, by Dr. Martin Downs, chief chemist at Thilmany Pulp and Paper Company, Kaukauna, Wis., in a talk before the Kaukauna Rotary Club.

He said that the industry progressed very slowly from 100 A.D., when the Chinese were first known to make paper, until recently when the source of supply was multiplied many times by the use of wood pulp. Until that discovery, most of the paper was made from old rags. The opening up of a new source of raw material made the industry look big and mechanical equipment moved faster. Machines were speeded up and were made wider.

Paper packaging has become a great thing in itself during the war, and is expected to go even farther in the postwar period. After the war much transport will be done by air where weight must be reduced. Paper boxboard when it replaces wood and metal for shipping is both lightweight and strong, the speaker said. He also discussed paper packaging in the war effort.

Kraft paper is the big thing for future mills, Dr. Downs said, because of the comparative ease in getting raw material. He predicted that there will be an enormous expansion of the importance of paper in the world after the war.

Eases Pulpwood Truck Order

Charges for the leasing of trucks by purchasers of pulpwood and other primary forest products to their suppliers will be exempt from the ceilings generally applying to truck rentals, the Office of Price Administration announced last week.

This action, which became effective last Wednesday, will enable pulp and paper mills and others who usually lease such trucks to base their charges on the normal life of trucks used in the various operations of transporting wood from woods to the purchaser's location.

That normal life is considered to be from 18 to 24 months, whereas ceilings in the general truck rental regulation are designed to cover ordinary highway trucks, the anticipated life of which is five years or longer.

Regulations establishing ceilings on the sale of pulpwood and other forest products prohibit the use of any device that would increase the established ceilings.

OPA said that this action is taken so that charges for these particular truck leases cannot be based on a longer than normal life of the trucks being leased and thus indirectly cause higher than maximum prices to be paid for the products being purchased.

Fox River Cleaned of Ice

Ice is out of the locks and canal level of the Fox River, the earliest it has been in years, according to Ben Prugh, manager of the Fox River Navigation Company, Kaukauna, Wis.

Necessary repairs are being made and they must be finished before navigation opens on the river, which will be around April 9, according to Mr. Prugh.

During the past winter all employees of the company, which transports coal and other supplies to paper mills and other industries in the Fox River Valley, were busy with the rebuilding of Barge No. 6, doing minor repairs to Barge No. 7, installing a new five-cylinder engine in the tug Ryan, and overhauling and doing minor repairs to the tug June.

The entire fleet is about ready to begin operations and a lot of activity is expected this year. "Indications are that there will be a better than normal demand for coal this season," Mr. Prugh said.

Powers Paper Co. Makes Improvements

SPRINGFIELD, Mass., April 2, 1945—Work is in progress at 149 Wason avenue, erecting an elevator shaft and installing an elevator shaft for the Powers Paper Company, of the same address, at a cost of $5,700. The builder is Ernest F. Carlson, Inc., Springfield.

ONE OF 27 DOW CHEMICALS USED BY THE PAPER INDUSTRY

a tip from cosmetics

for men using pigment binders, and film forming agents

Need a pigment binder in your product? Or a film forming agent? Then it may profit you to eavesdrop on an experience of the cosmetic industry. When silk stockings became an early war casualty, ladies demanded leg make-up preparations. But specifications laid down by the feminine sex were pretty tough—leg make-up must stay on and not wear off in spots, must be free of odor, harmless to the skin, uniform and stable in color, sufficiently viscous to prevent running before drying, be unaffected by perspiration—truly an imposing list of requirements.

Cosmetic executives consulted with Dow research technicians and numerous experiments followed. The final answer was Methocel. Why? Because this water soluble Dow cellulose ether, an excellent pigment binder, holds the color fast to the leg. It also acts as a film forming agent on the skin producing proper luster and opacity. It is odorless, viscous, harmless to skin, exceptionally uniform, reduces pigment settling in the bottle—all in all a perfect solution for a perplexing problem.

The same sterling qualities of Methocel may help improve your product. We'll be glad to send more information.

Methocel

Water Soluble Dow Methylcellulose

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Newsprint Industry in Stronger Position

Canadian Manufacturers Estimate $3 Increase In Newsprint Price Will Add $7,800,000 Annually To Gross Profits On Monthly Supply of 200,000 Tons — Exports To U. S. Rise 14 Percent During War.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 2, 1945—The increase in the price of newsprint by $3 per ton, announced by the U. S. Office of Price Administration, comes as no surprise to the industry here, for quite recently the whole situation was reviewed with the publishers, and Canadian companies, equally with U. S. manufacturers of newsprint, had found it easy to show the greatly increased costs under which they have been operating due to the special developments that have arisen as a result of the war.

When previous increases had been made after negotiations between large customers and newsprint mills it was always recognized that at no one time was the increased price made as large as was warranted by the conditions that prevailed in the operations of the larger pulp and paper companies. In the meantime it was also pointed out that the larger newspapers in the United States have seen phenomenal rises in their revenues due to the fact that there has been such a large increase in the amount of money that the average person has had to spend as a result of wages in war work. This larger business in turn had made it advisable for the majority of publishers to obtain larger quantities of newsprint. and in view of the strain that has been put on the pulp and paper companies it has been much easier than usual to get the various interests together on the fairness of a price increase.

Will Enable Mills To Meet Urgent Demands

All these developments will enable Canadian pulp and paper companies to put themselves into strong shape for the after-war period to meet the more urgent demands that are coming to them from so many of their customers. On the basis of a supply of 200,000 tons a month to the United States, this will represent an increase of some $600,000 a month (with the premium of 10% on U. S. funds, $660,000), for the Canadian newsprint manufacturers, or about $7,800,000 gross on an annual basis.

The original application for the increase was made on behalf of the United States manufacturers, who cited below-normal earnings for the industry as a result of the increased costs, and the possibility that without such increase manufacturers might turn to the manufacture of products other than newsprint on which a reasonable profit could be secured.

Regarding the price of newsprint to domestic Canadian consumers, it had not been possible up to the time of writing to secure any comment from the offices of the Newsprint Association of Canada, and comment on behalf of the Administrator here was confined to the statement that there was no application before the Administrator for an increase and hence the situation is unchanged. The Montreal Gazette says that "present indications are that the domestic price is unlikely to change for the time being."

Paper Exports to U. S. Up in War

Charles Vining, president of the Newsprint Association of Canada, in a letter to the American Newspaper Publishers' Association, says:

"Throughout the last five years of the war, 1940-44, Canada has not only maintained the pre-war normal flow of pulp and paper supply for the United States, but has provided United States consumers with substantial increases of pulpwood, pulp and newsprint. Compared with the five pre-war years of 1935-39, the average annual increases of wartime supply from Canada have been: pulpwood, increased by 25%; pulp, increased by 88%; newsprint, increased by 14%. Measured in cords of wood, the above increases represent a combined total increase of 33%."

The letter was in the form of a comment on a recent statement of Representative Case, of South Dakota, that "Canada has not had any too co-operative an attitude in connection with the current shortage of all kinds of paper and paper products."

Use of Newsprint Cut 6 Per Cent

[FROM OUR REGULAR CORRESPONDENT]

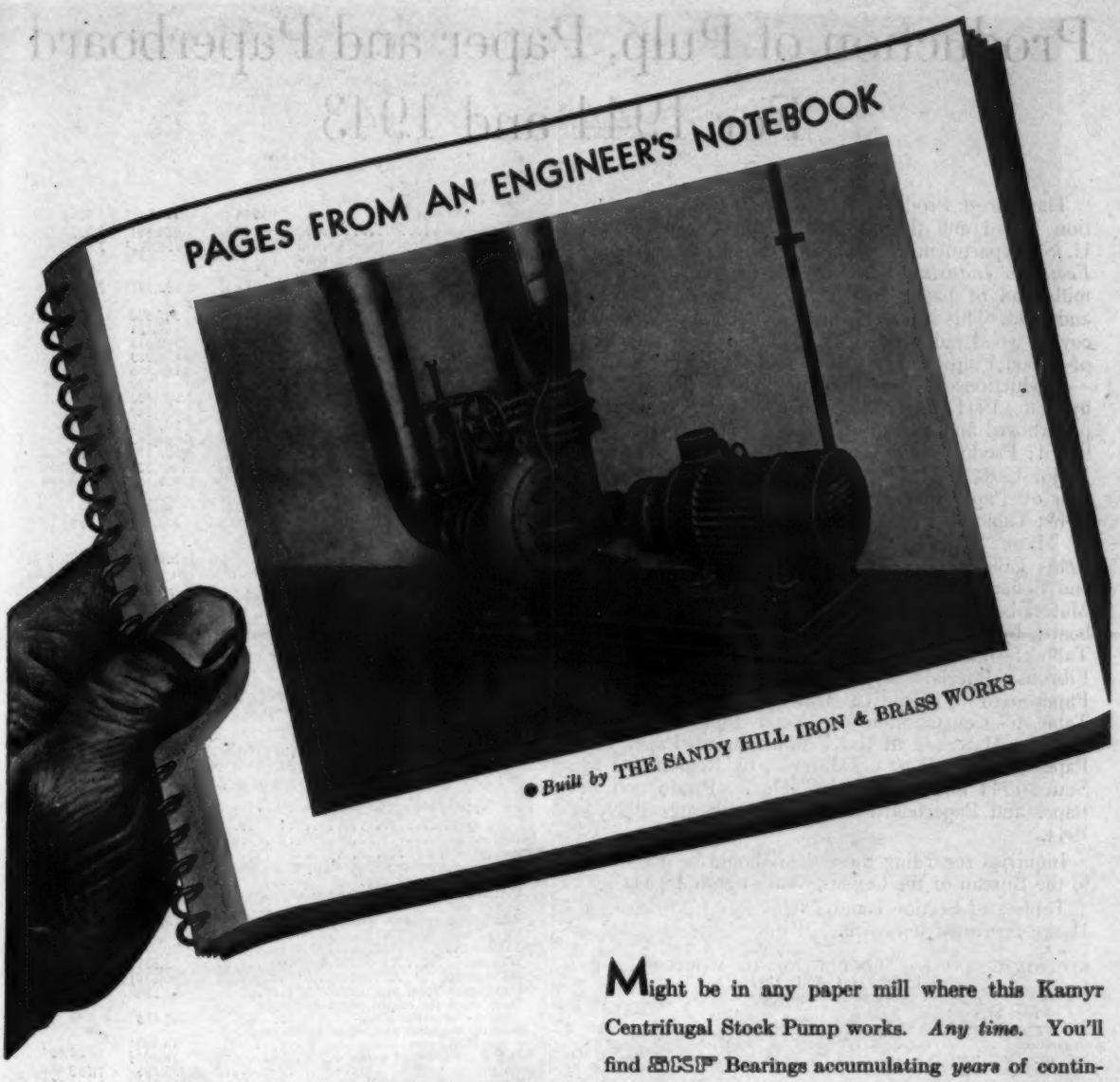
WASHINGTON, D. C., April 4, 1945—United States newspaper publishers are required immediately to reduce by 6% their April orders on all paper mills in Canada, the United States and Newfoundland, in order to balance newsprint demands with available supplies, officials of the WPB Printing and Publishing Division said today.

Under an amendment to the newspaper order L-240, dated Saturday, March 24, a new formula for calculating a publisher's monthly paper base for the second quarter of 1945 was outlined. Effective April 1, each newspaper publisher must total his consumption quotas for the first and second quarters of 1945, and add any extra-quota newsprint grants made on appeals during the first quarter of 1945. This figure is then to be divided by six to get the average monthly base, but to this base the publisher may add one-third of any extra-quota tonnage granted on second quarter 1945 appeals. Publishers may not include in the monthly base any carry-over paper from preceding quarters, it was stated. From this monthly base just calculated, 6% must be subtracted before orders on mills are placed, in view of an anticipated shortage of newsprint in the second quarter.

The amendment also defines "use" of newsprint as including all tonnage of paper used in printing a newspaper but not paper lost or damaged in transit. In determining the dates on which paper is "used" under L-240, a publisher may employ the dates on which the paper is actually printed or the dates appearing on the respective issues, provided he follows the same method employed in computing his 1941 base tonnages.

The carry-over provision was changed so that new newspapers starting up under the 1¼ tons per quarter exemption would not be permitted to carry over any savings of print paper into a succeeding quarter.

The effective date of inventory ceilings was changed from the end of the calendar year to June 30, 1945. This change will require all newspapers to bring their inventories down to the permissible supply at the end of the second quarter.



TO BRING RELIABILITY TO PAPER STOCK PUMPS

Might be in any paper mill where this Kamyr Centrifugal Stock Pump works. *Any time.* You'll find SKF Bearings accumulating *years* of continuous, smooth running . . . of absorbing radial and thrust loads as they come . . . of never needing adjustments and requiring only occasional lubrication. If all the years that SKF Bearings have served on paper stock pumps were added together, the result would be impressive. 3807

SKF INDUSTRIES, INC., PHILA. 34, PA.

Production of Pulp, Paper and Paperboard For 1944 and 1943

The Forest Products Bureau of the War Production Board and the Bureau of the Census of the U. S. Department of Commerce have just issued in *Facts for Industry*, Series 24-1-3 the census of pulp mills and of paper and paperboard mills for 1944 and 1943. This is divided into two sections. Section I covers wood pulp and includes Table 1—Production of Wood Pulp by Type, 1944 and 1943 and Table 2—Production of Wood Pulp by Type by Region and by State, 1944 and 1943. Section II covers paper and paperboard and includes Table 1—Paper and Paperboard: Production in the United States Classified by Major Uses, 1944, 1943 and 1942; Table 2—Production of Paper and Paperboard by Type, 1944 and 1943; Table 3—Production of Paper and Paperboard by Major Type, by Region and by State, 1944 and 1943; Table 4—Production of Paper and Paperboard and Consumption of Wood Pulp and Other Fibrous Materials in the Manufacture of Paper and Paperboard by Region and by State, 1944 and 1943; Table 5—Consumption of Wood Pulp and Other Fibrous Materials in the Production of Paper and Paperboard by Type of Material, 1944 and 1943; Table 6—Consumption of Wood Pulp and Other Fibrous Materials in the Production of Paper and Paperboard by Type of Material, by Region and by State, 1944 and 1943 and Table 7—Production of Paper and Paperboard in the United States 1929 to 1944.

Inquiries regarding these data should be addressed to the Bureau of the Census, Washington 25, D.C.

Table 1 of Section I and Tables 1 and 2 of Section II are reprinted herewith.

SECTION I. TABLE 1—PRODUCTION OF WOOD PULP BY TYPE, 1944 AND 1943[1]
(Tons of 2,000 pounds)

Type of wood pulp	1944	1943
All types	10,108,443	9,680,462[2]
Groundwood	1,557,681	1,556,810[3]
Sulphite fiber, total	2,386,149	2,436,502
Unbleached	862,928	883,306
Bleached	1,523,221	1,553,196
Sulphate fiber, total	4,548,810	4,235,724
Unbleached	3,739,602	3,486,535
Semibleached	144,262	147,040
Bleached	664,946	602,149
Soda fiber, bleached and unbleached	412,755	418,868
Semichemical, off quality, screenings and miscellaneous	540,380	405,309
Defibrated, exploded, asplund fiber and similar grades	662,668	627,249[4]

[1] Source: Compiled by the Bureau of the Census from reports received by the Pulp Allocation Office, War Production Board.
[2] Revised to include the production data of two companies reporting the production of wood pulp for the first time in 1944. These companies operate fully integrated mills and all pulp produced is consumed in the same establishment. The consumption of wood pulp reported by these companies for 1943 was, therefore, accepted as the production data for these companies for that year.
[3] Revised to exclude the production of one company whose product was reclassified as defibrated pulp rather than groundwood pulp.
[4] Revised to include the production of one company whose product was reclassified as defibrated pulp rather than groundwood pulp and the production data of two companies that reported the production of wood pulp for the first time in 1944 (see footnote 2).

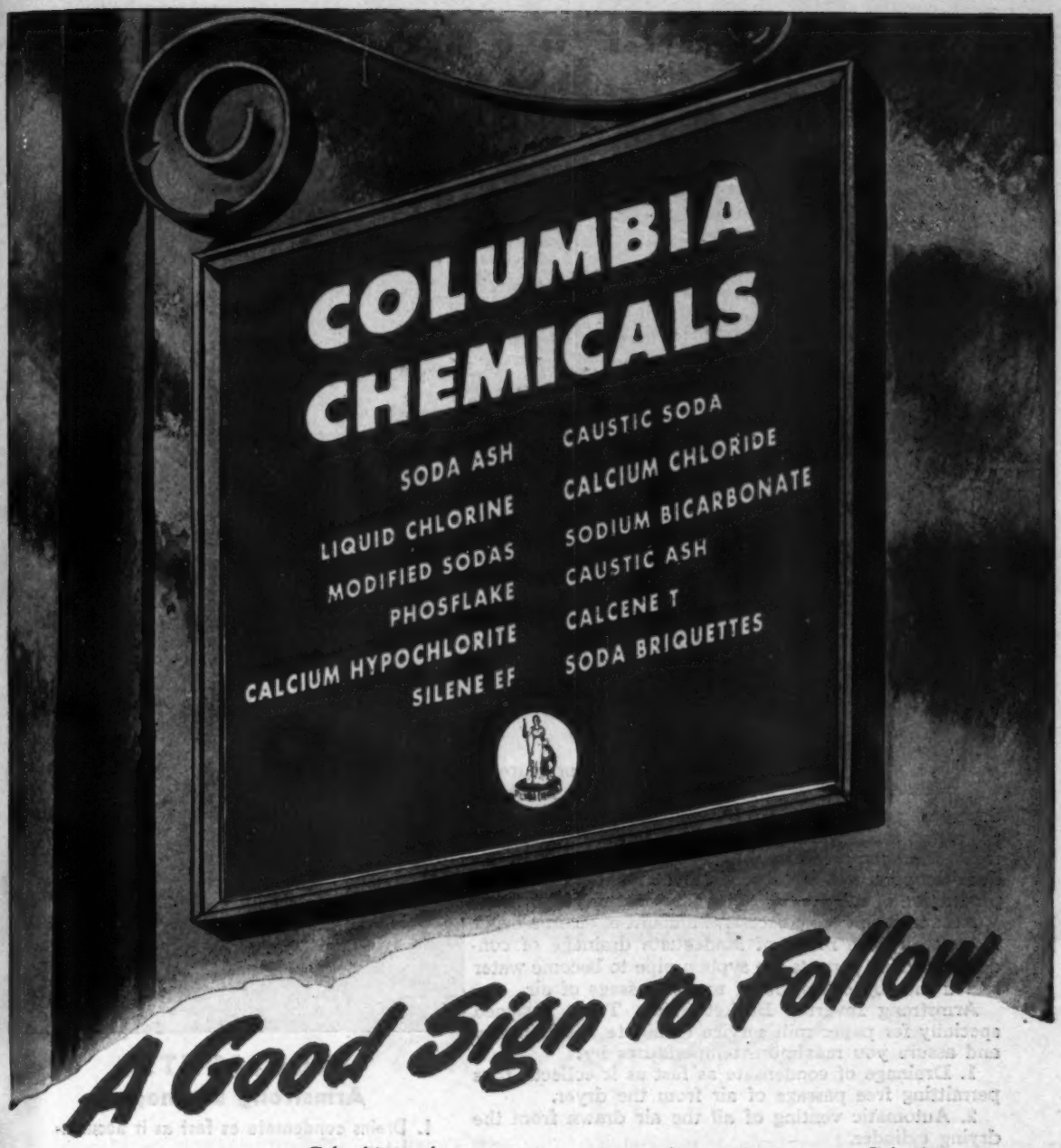
SECTION II. TABLE 1—PAPER AND PAPERBOARD: PRODUCTION IN THE UNITED STATES CLASSIFIED BY MAJOR USES 1944, 1943 AND 1942
(Tons of 2,000 pounds)

Type of paper and paperboard by major uses	1944	1943	1942
All types	17,182,804	17,035,688	17,083,862
Printing and fine papers, total	3,724,003	4,010,461	4,336,883
Newsprint	720,752	811,309	967,211
Groundwood printing and specialty paper	593,094	585,673	610,168
Book paper	1,435,785	1,592,878	1,704,029
Fine paper	974,372	1,020,601	1,055,475
Coarse and industrial papers, total	2,649,554[1]	2,558,293[2]	2,778,268[3]
Coarse wrapping, bag and converting papers (includes shipping sack paper)	2,314,031	2,262,377[3]	2,525,841[3]
Special industrial paper and paperboard	245,416[4]	207,662	187,897
Absorbent paper	90,107	88,254	64,530
All other paper, total	965,433	968,918	998,144
Sanitary paper	807,893	806,023	811,343
Tissue paper	157,540	162,766	170,653
Paper not elsewhere classified	.....	129	16,148
Construction material, total	1,968,713	1,941,433	2,053,437
Building paper	881,246	877,582	1,001,383
Building board	1,087,467	1,063,851	1,052,054
Paperboard for packaging, total	7,094,769	6,964,312	6,463,921
Container board	4,228,304	4,087,972	3,755,438
Folding boxboard	2,116,152	2,047,238	1,711,795
Set-up boxboard	750,313	829,102	996,688
Miscellaneous paperboard, total	780,332	592,271[5]	453,209[5]
Cardboard	69,709	63,757[5]	53,963[5]
Paperboard not elsewhere classified	710,623	528,514[5]	399,246[5]

[1] Includes data on the production of "special industrial boards" in 1944 in accordance with the change in the definition of this classification in January 1944.
[2] Includes only data on the production of "special industrial paper" for 1942 and 1943. The definition of this classification was changed to include industrial boards in January 1944.
[3] Includes data on the production of "special industrial paper" having a base weight of less than 100 pounds in 1942 and 1943.
[4] Includes data on the production of all "special industrial paper and paperboard" in 1944.
[5] Includes a small quantity of gasket, stencil and jacquard board which was classified as "special industrial paper and paperboard" in 1944.

SECTION II. TABLE 2—PRODUCTION OF PAPER AND PAPERBOARD BY TYPE, 1944 AND 1943
(Tons of 2,000 pounds)

Type of paper and paperboard	1944	1943
All types	17,182,804	17,035,688
Paper, total	8,220,236	8,415,254
Newsprint	720,752	811,309
Groundwood printing and specialty paper, total	593,094	585,673
Hanging	81,103	66,399
Printing, including catalogue and directory	231,259	237,535
Poster and railroad manila	18,873	27,986
Box lining and box covering	6,370	11,591
Rotogravure	82,588	118,126
Tablet	20,986	
Writing	13,551	54,537
Mimeograph	45,650	
Continuous form and salesbook	14,366	28,752
Body stock for coated paper and body stock for carbonizing	25,418	14,724
Adding machine and other business machine paper	14,432	
Other groundwood paper	38,498	26,023
Book paper, total	1,435,785	1,592,878
General printing, total	1,034,214	1,149,727
Plain and super (free from groundwood)	400,628	461,504
Plain and super (containing groundwood)	75,397	133,131
Machine coated (free from groundwood)	61,162	69,254
Machine coated (containing groundwood)	243,788	238,358
Music	3,135	
Poster	7,433	86,644
Label and wraps	74,547	
Offset	167,677	145,870
Other general printing paper	447	14,966
Converting paper, total	399,872	436,594
Body stock for coated book (free from groundwood and containing groundwood)	192,714	211,497
Envelope	109,307	105,140
Tablet	76,882	
Adding machine and other business machine paper	6,233	101,095
Box lining and box covering	1,857	
Other converting book paper	12,879	18,862
Other book paper	1,699	6,557
Fine paper, total	974,372	1,020,601
Writing paper, total	699,480	744,333
Rag content, total	118,179	116,568
Bond and writing	56,933	64,295
Ledger	14,369	15,437
Manifold	8,061	8,756
Mimeograph, gelatin and spirit process duplicating	1,445	2,174
Papeterie and wedding	12,384	3,344
Map and chart	18,386	22,562
Other	6,601	
Chemical wood pulp, total	581,301	627,765
Bond and writing	323,913	395,247
Ledger	28,143	26,075
Manifold	28,968	30,571
Mimeograph, gelatin and spirit process duplicating	98,654	86,816
Papeterie and wedding	40,885	54,770
Opaque Circular	5,291	7,042



A Good Sign to Follow

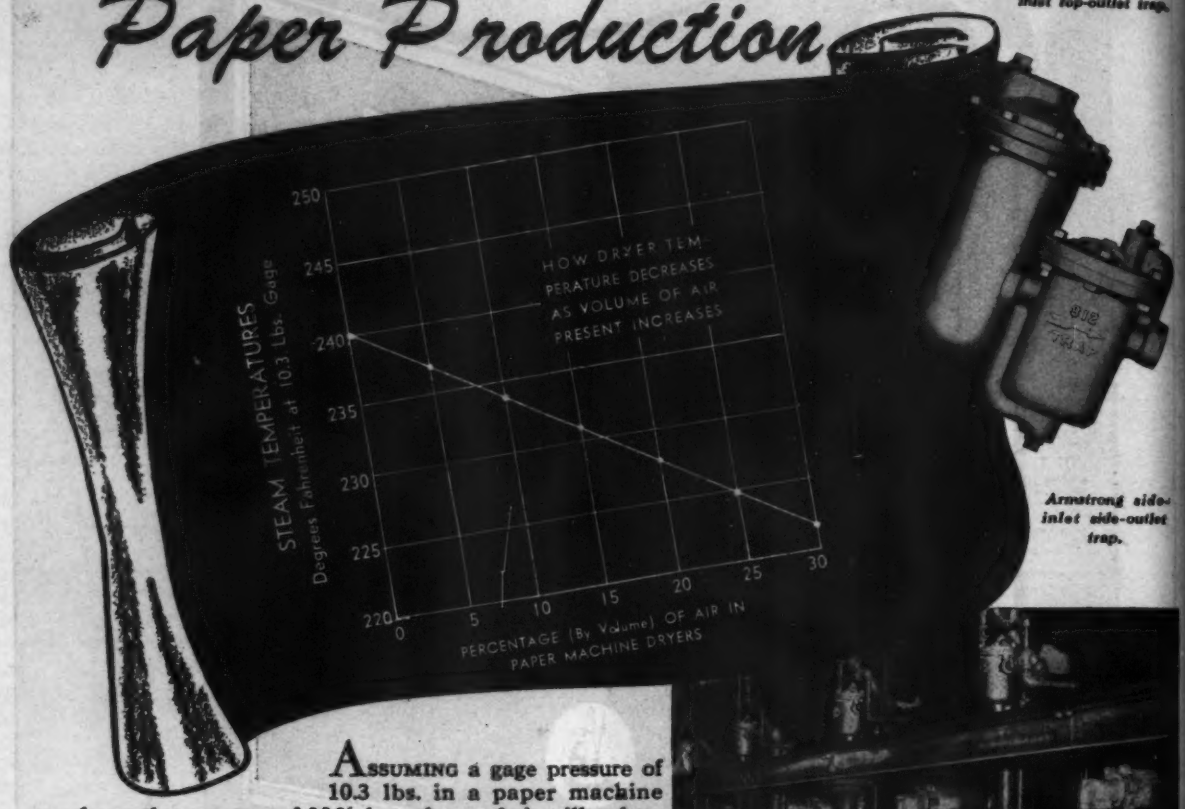
Columbia products meet your most exacting requirements . . . Columbia policies contribute to enduring business relationships. Well located plants and excellent distribution facilities are other important factors in the selection of Columbia as your source of alkalies and related chemicals.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING • PITTSBURGH 19, PA.

CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • NEW YORK • CINCINNATI • CLEVELAND
PHILADELPHIA • MINNEAPOLIS • CHARLOTTE • LOS ANGELES

. . . how air in dryers reduces *Paper Production*



ASSUMING a gage pressure of 10.3 lbs. in a paper machine dryer, the presence of 20% by volume of air will reduce the steam temperature to 228° F., which is *12.1° below true steam temperature.* Higher percentages of air reduce temperatures correspondingly. The effect on paper production of sub-normal dryer temperatures is obvious.

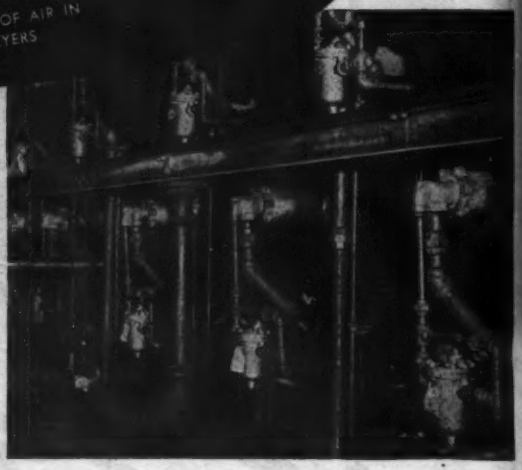
Accumulation of an excessive amount of air in a dryer is generally the result of inadequate drainage of condensate which permits the syphon pipe to become water sealed thereby closing it off to the passage of air.

Armstrong Inverted Bucket Steam Traps designed specially for paper mill service eliminate this difficulty and assure you maximum temperatures by:

1. Drainage of condensate as fast as it collects, thus permitting free passage of air from the dryer.
2. Automatic venting of *all* the air drawn from the drying cylinder.

For a comprehensive, educational and easy-to-read study of this subject write for a copy of "OBSERVATIONS ON DRYER DRAINAGE SYSTEMS" by Paul L. Ulrich.

CHECK YOUR DRYER TEMPERATURES! If below true steam temperature, your drainage system is inadequate. For complete details, write today.



HIGHLIGHTS
Armstrong Drainage

1. Drains condensate as fast as it accumulates.
2. High Air venting capacity.
3. No steam waste.
4. Low maintenance.
5. Maintains uniform temperatures, uniform drying.
6. Quickly responsive to load changes.
7. Permits operation of groups of dryers at different temperatures.
8. Reasonable first cost — an investment that pays high returns.

ARMSTRONG MACHINE WORKS
818 Hoffman Street, Three Rivers, Mich.

ARMSTRONG *Inverted Bucket* STEAM TRAPS

Hold that line!

A thought on peace-time business that helps war production

Stabilized, maximum employment is not only possible, it's essential if we are to maintain our American standard of living —and you can do something about it—*now*.

We Suggest This . . . (1) Determine your minimum needs to begin post-war business. (2) Place unrated orders for these necessary materials to be delivered when restrictions permit. (3) Advise your customers to follow this same plan.

Here's Why . . . (1) This plan permits *suppliers* to anticipate your needs and begin earlier production on them. (2) It also gives *you* a backlog to start you off when Uncle Sam cancels *his* orders. (3) Employees knowing of your activity in this respect will be more content and interested in their work—they'll feel more secure about your business offering peace-time jobs. (4) Your staff will be oriented in their thinking and less susceptible to vague reconversion worries.

With all business following this plan, the gap will be shortened. Depleted world markets will be more *quickly* exploited. Those 55 million peace-time jobs needed for an ideal post-war economy will be much closer to actuality.

Remember . . . *Good* management always sees its responsibility to the overall national welfare. As C.E.D. reports, "the companies that are doing the best on war contracts are the same ones that are doing the best post-war planning." For reprints of this ad, write Heppenstall Company, Pittsburgh 1, Pennsylvania.

HEPPENSTALL, the most dependable name in chipper knives

Type of paper and paperboard	1944	1943
Map and chart	49,957	27,244
Other	5,490	
Drawing, mechanical and detail	3,825	5,563
Protective and check	23,252	17,405
Reproduction paper	49,880	46,904
Cover paper	44,795	37,618
Text paper	7,570	10,117
Bristols, total	83,947	99,126
Index (rag content)	11,059	10,653
Index (except rag)	47,094	53,085
Printing (mill)	12,829	17,010
Postcard (includes Government postcard)	10,852	12,662
Other bristols (except bogus)	2,113	5,716
Thin paper, total	58,329	54,347
Carbonizing (free from groundwood)	24,603	20,978
Condenser	5,629	5,468
Cigarette	24,533	24,950
Other thin paper (stencil, lens, etc.)	3,564	2,951
Other fine paper	3,294	5,188
Coarse wrapping, converting and bag paper total	1,922,329	1,946,908[1]
Wrapping paper, total	789,084	831,758[1]
Butchers, meat wraps, grocers and imitation parchment	190,396	147,602
Greaseproof	24,406	27,380
Glassine	82,713	83,650
Vegetable parchment	32,247	33,294
Screenings, core stock, bogus or imitation kraft and mill wrappers	117,802	103,252[2]
Unbleached kraft wrapping, M.F and M.G.	229,928	293,737
Other wrapping, M.F. and M.G.	111,592	142,843
Bag paper	375,167	518,114
Converting paper, total	758,078	597,036[1]
Asphalting and creping other than towel, total	271,389	159,932
Asphalting, including creped or creping stock for asphalting	256,803	
Creping, including creped or creping stock not for asphalting and not including toweling	14,586	159,932
Envelope stock	94,061	95,560
Gumming stock	91,805	66,270
Twisting and spinning (18# and up)	27,186	21,983
Waxing (18# and up)	207,196	193,553
Other converting	66,441	59,738[1]
Shipping sack paper (including multi-wall) total	391,702	315,469
Shipping sack paper (meeting min. stds. WPB L-279)	354,474	315,469
Other shipping sack paper	37,228	
Special industrial paper, total	245,416	207,662[2]
Tabulating card stock and file folder stock	74,306	138,290
Tag stock, including manila board	80,054	
Abrasive paper backing	5,084	
Cable paper	9,585	
Electric insulation and armature paper and paperboard	10,224	49,372[2]
Gasket paper and paperboard	6,490	
Stencil-backing paper and stencil board	7,065	
Wallet and patch stock	3,906	
Other special industrial paper	48,702	
Sanitary papers, total	807,893	806,023
Sanitary napkins stock, wadding	41,389	39,825
Toweling stock, total	193,042	190,362
Industrial (bulk and dispenser types)	156,860	190,362
Household (retail packages)	36,182	
Toilet tissue stock	413,846	414,652
Napkin stock	73,780	76,375
Facial tissue stock	79,612	83,696
Other sanitary papers	6,224	1,113
Tissue paper, except sanitary and thin papers, total	157,540	162,766
Waxing tissue	54,889	58,666
Wrapping tissue	35,439	44,848
Pattern tissue	4,192	2,980
Twisting tissue	14,193	13,087
Fruit and vegetable wrapping tissue	31,240	30,171
Crepe wadding for packing	7,651	5,393
Other tissue paper	9,936	7,627
Absorbent paper, total	90,107	88,254
Blotting paper	9,966	9,786
Filter	4,235	3,589
Matrix paper and board	5,846	5,953
Vulcanizing fibre stock	27,358	32,167
Resin impregnating stock	29,155	24,445
Die wiping	4,448	12,314
Other absorbent paper	9,099	
Building paper, total	881,246	877,582
Sheathing paper	21,693	35,572
Felts	757,613	722,367
Asbestos and asbestos-filled	85,125	102,966
Other building papers	16,815	16,677
Paper not elsewhere classified	.....	129
Paperboard, total	8,962,563	8,620,434
Container board, total	4,228,304	4,087,972
Kraft liner (.009 and over)	1,523,242	1,465,980
Jute liner (over .009), total	1,189,767	1,134,353
V-box stock	183,819	1,134,353
Other	1,005,948	
Corrugating board, total	1,109,573	1,071,156
Kraft	101,493	197,691
Straw	378,073	381,363
Bogus	446,517	294,712
Other corrugating	183,490	197,390
Container chip, total	314,034	338,410
Container chip (.009)	40,689	48,996
Container chip (over .009)	273,345	289,414
V-box stock	165,553	289,414
Other	107,792	
Other container board	91,688	78,073
Folding boxboard, total	2,116,152	2,047,238
Sanitary food container stock, total	386,519	385,271
Milk bottle stock	66,596	385,271
Milk bottle hood and lip cover stock	18,155	
Liquid tight container stock and cup lid stock	42,721	
Cup and round nested food container stock	84,437	
Ice cream and frozen food container stock and butter carton stock	124,677	
Milk bottle plug cap stock	25,904	
Other	24,029	
Folding boxboard, other than sanitary food container stock, total	1,729,633	1,661,967
Manila and bleached manila lined chipboard, total	530,813	598,701
Single lined	526,514	598,701
Double lined	4,299	
Patent coated (all type backs), total	347,143	395,803
News back	342,743	395,803
Manila and double patent coated	4,400	
Clay coated (bending)	87,049	83,935
Bending and news-lined chip, total	482,680	371,740
Bending and semibending chip	336,888	246,497
News-lined chip (cracker shell)	145,792	125,243
Kraft lined, total	143,063	101,985
Single lined	79,143	
Double lined (arsenal board and similar specifications	21,391	101,985
Double lined (except arsenal board and similar specifications)	20,068	
Other	22,461	
Other folding boxboard	138,885	109,803
Set-up boxboard (nonbending and unpasted), total	750,313	829,102
Chip board and strawboard	342,393	381,791
Solid newsboard	127,788	169,152
News-lined chip board	235,312	236,034
White wood vat lined	23,929	32,026
Other set-up boards	20,891	10,099
Carboard, total	69,709	63,757[2]
Mill blanks, clay coated blanks and tags	21,584	23,464
Photomount stock	5,485	2,692
Bogus bristol	15,169	11,502
Other cardboard	27,471	26,099[2]
Building boards, total	1,087,467	1,063,851
Wallboard and wallboard stock	273,065	301,333
Insulating (all building types, all thicknesses)	636,659	577,473
Liner for gypsum or plasterboard, total	169,767	177,296
Natural or colored	117,079	177,296
White	52,688	
Other building board	7,976	7,749
Miscellaneous boards, total	710,623	528,514
Tube stock, total	458,107	307,308
Ammunition container board and similar specifications	299,251	307,308
Other tube stock	158,856	
Binder's board (wet machine)	65,462	53,479
Pressboard (including imitation pressboard)	14,073	22,582
Match board (splint stock)	25,606	25,817
Dense fibre	64,405	67,031
Solid wood pulp board, not elsewhere classified	14,682	21,155
Other boards	68,288	31,142

[1] Includes data on the production of "special industrial paper" having a base weight of less than 100 pounds. These papers were reported as "special industrial paper" in 1944 after a change in the definition of this major grade removed all weight and caliper restrictions.

[2] Includes only "special industrial paper" having a base weight of 100 pounds or more in accordance with the definition of "special industrial paper" in effect throughout 1943. Does not include data on the production of "special industrial paperboards," such as armature, gasket or stencil board, which were classified as "miscellaneous boards" prior to the change in definition mentioned in footnote 1.

[3] Includes data on the production of jacquard board which were reported under "special industrial paper and paperboard," in accordance with the change in the definition of this major grade (see footnote 1).

Consolidated to Call Bonds Later

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 2, 1945—It is stated in the papers here that it can now be assumed that whatever plans have been studied for the calling of Consolidated Paper Corporation's 5½% first mortgage bonds and first mortgage sterling registered debenture stock due 1961, will have to be deferred till after the fall, since the bonds are callable on at least 90 days' notice on any interest date, and the interest dates are January 2 and July 2. Accordingly, if the bonds are to be called, as has been rumored recently, it would have to be as of January 2, 1946, with the notice to call to be as of the beginning of October.

It is understood that one local investment house has been looking into the possibilities of a deal just recently, and report has it that had a refunding operation been arranged at this time it might have taken the form of, say $30 millions, or about 75% of the outstanding issue, in long terms on the New York market, with the balance on the domestic market.

AUG -2 '46
April 5, 1945
9605
TP21t v.120 pt.2

Container Machinery Use Tightened

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 4, 1945—Restrictions on the use of solid-fiber container production equipment have been tightened by the War Production Board to reserve the use of such equipment for the production of V-boxes and other essential shipping containers under preferred orders or when specifically authorized, WPB reported today.

An amendment to Direction 2 to Conservation Order M-290, provides that no person may use solid fiber container production equipment to fill any order except a preferred order, unless authorized in writing to do so by the board. A preferred order is defined as an order for V- and W-boxes, interior boxes and parts for the military services, solid-fiber sheets for manufacture of drums, freezer boxes for butter, meat and fish, or solid fiber containers for packing explosives. Orders for such sheets and containers, except V- and W-boxes, are required to carry a purchaser certificate to the effect that the buyer is familiar with Direction 2 and that the items purchased are listed in Schedule A of the Direction, WPB officials explained.

Application for authorization to use solid fiber-container equipment for other than preferred orders may be made by letter to the Paperboard Division of WPB, but will be granted only when it is apparent that the proposed production of non-preferred orders will not interfere with the filling of preferred orders on hand or which could be obtained with the assistance of WPB, officials said.

Reinhold-Gould Inc. Moves

Harry E. Gould, president of Reinhold-Gould, Incorporated, distributors of well-known mill brand printing papers, announces the opening of a midtown office at 535 Fifth avenue on April 6. The executive and sales staff of Reinhold-Gould, Incorporated will be in an excellent position to render even better service to the trade.

While these new midtown headquarters will service the trade in Manhattan, the branch office and warehouse will still be maintained at 261 Walton avenue, to service uptown, suburban and out of town customers.

HARRY E. GOULD

The new offices embody every latest facility for modern efficient operation.

Reinhold-Gould, Incorporated is an old established paper house. Originally Reinhold Card and Paper Company began business in 1908, catering principally to the trade in upper Manhattan, the Bronx, Westchester, Long Island, Jersey, and including parts of Connecticut and upstate New York, as far as Peekskill. In 1943 the business was purchased by Harry E. Gould, who has had many years of experience in the paper industry, and the firm name was changed to Reinhold-Gould, Incorporated. Under the new management, the company strengthened its position as a dominant factor in the New York area. They are distributors of many well-known mill brand printing papers.

With the modernized facilities and new location, Reinhold-Gould, Incorporated is preparing for post-war expansion. It is their intention, when manpower becomes available, to enlarge the various departments. Fifteen additional salesmen will be employed. Several more will be added to the telephone order department. The advertising and direct mail departments will be strengthened with experienced individuals. Others will be added to the purchasing and sample departments.

Reinhold-Gould, Incorporated has a complete ruling department—a valuable and proven convenience to the printing and stationery trade.

Michigan Div. to Meet April 19

The next meeting of the Michigan Division of American Pulp and Paper Mill Superintendents Association will be held on Thursday, April 19, at the Park-American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

Through the cooperation of the Sinclair Refining Company and their local manager, G. V. Watson, arrangements were made for Army Ordnance to show their film "Paper Packaging Materiel for Armed Forces." Films to be shown by Armed Service Force; Detroit Ordnance District, Captain "C.A.C.," Ordnance Dept. Public Relations Officer.

The Michigan Division will hold its annual Ladies' Night Dinner Dance Saturday evening, May 5, 1945, at the Park-American Hotel. Jack Dickson, of the R. T. Vanderbilt Company, will be the toastmaster of the evening. Cocktail hour from 6 to 7 P.M. Dinner will be served at 7P.M., dancing until midnight.

Price of tickets $3.00 per person.

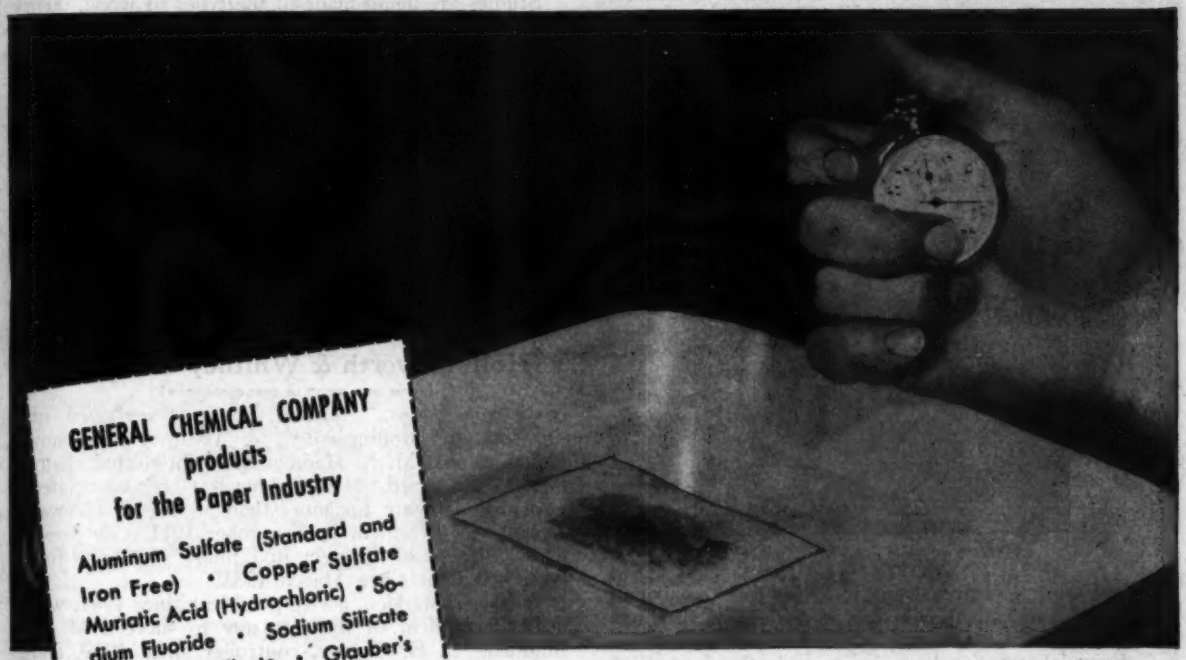
W. A. Jordan Goes With General Mills

Wesley A. Jordan has recently joined the research staff of General Mills, Inc., Minneapolis. Mr. Jordan, after graduating from North Central College, worked as a research chemist for Westinghouse Electric and Manufacturing Company. In 1933 he took a year's graduate work at Ohio State University. He then became for three years a foreman in the fatty acid plant of Armour & Company and later a development engineer. In 1939 he was associated with the Sherwin-Williams Company as a research chemist and development engineer, and returned to Armour & Co. in 1941 as development engineer on fatty acids and drying oils and has served since last July as head of the Development Department of that company.

Mr. Jordan will be associated with A. G. Hovey in the New Chemicals Development Section of the Research Department of the company in Minneapolis.

SPECIFY "GENERAL CHEMICAL"

for effective pH control and maximum sizing



GENERAL CHEMICAL COMPANY products for the Paper Industry

Aluminum Sulfate (Standard and Iron Free) • Copper Sulfate • Muriatic Acid (Hydrochloric) • Sodium Fluoride • Sodium Silicate • Sodium Metasilicate • Glauber's Salt (Crystal or Anhydrous) • Salt Cake • Sodium Sulfide • Sodium Hyposulfite • Sodium Sulfite (Anhydrous) • Sodium Bisulfite (Solution or Anhydrous) • Disodium Phosphate • Trisodium Phosphate • Tetrasodium Pyrophosphate • Sulfuric Acid • Nitre Cake (Sodium Bisulfate) • Nitric Acid

TODAY more than ever, paper makers are insisting on General Chemical "Alum" in their operations because they can rely on its uniformity for maximum sizing and desired pH.

Careful attention to all production details plus constant laboratory control make General Chemical Aluminum Sulfate a product of high quality in its various grades. Specify "General" for your quality paper-making chemicals!

[redacted]

Standard—Lump; Ground 99% thru 8 mesh, 95% thru 10 mesh; Powdered 95% thru 100 mesh.

Iron Free—Lump approx. 2½"; Ground thru 8 mesh.

[redacted]

Solutions: from 38°—60° Baume. Wt. Ratio (Na_2O to SiO_2) from 1:2.00—1:3.40.

Appearance: Opalescent to clear.

BASIC CHEMICALS

GENERAL CHEMICAL COMPANY

FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

John A. Owen To Be Sales Manager

The Sorg Paper Company, Middletown, Ohio, has appointed John A. Owen as sales manager of the company's newly-established Resin Products Department. Mr. Owen, who has been with the Sorg organization since 1939 in a sales capacity, has been very active for the past two years in the Plastic Club of the United States and was recently elected president of that group.

L. C. Currier, who is mill manager of the Sorg Paper Company, will also head-up the manufacturing end of this department, and C. A. Sorg is to be production manager. D. M. Yost, who is a member

JOHN A. OWEN

of the Sorg Research Department, is to be chairman of the Development Division of the Resin Products Department.

Sorg laboratories have been conducting extensive experiments for several years in the field of resin-fortified papers and the Resin Products Department has been set up to produce and further develop this new material. Present plans call for the production of three general types of resin papers: impregnated for lamination—to be used in the manufacture of molded products or flat sheets; surfacing resin papers for facing plywood; and resin coated papers.

According to Sorg technicians who have conducted the research and experiments with these papers, there are innumerable uses to which these papers can be adapted. It is the belief of the Sorg management that resin fortified papers have tremendous manufacturing and sales possibilities in the post-war period that is almost comparable to that of plastics and have established the Resin Products Department to be prepared for the manufacture and marketing of resin papers when conditions will permit.

Would Colonize Forest Areas

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 2, 1945—Of interest to pulp manufacturers in this Province is the Ontario Government's proposed plan for colonizing forest areas. The Department of Planning and Development will experiment with what is known as the Nipigon Forest Village project. This plan, one of the first concrete steps in post-war aims by any provincial administration, has aroused considerable interest and its progress will be followed by people interested in forestry development and by post-war planners in general.

The site of the proposed experimental village is on the south shore of Lake Nipigon in northwestern Ontario. It is still in the idea stage and much depends upon what geologists and other scientific experts find upon investigation of the area. It is known that there is much conglomerate rock and it may well be that the soil conditions are not suitable for the purpose. Investigations are being carried out under the supervision of Dr. George B. Langford, director of the Ontario Government's new department of Planning and Development.

Studies are being made of the types of wood, their rates of growth, size of the annual crop, etc. The soil and wild life must also be studied, because the idea of the experimental village is to settle about 50 families, preferably war veterans, chosen for their adaptability to forest life. Family garden plots would have to be sufficiently productive to supply the village's need in vegetables and small fruits to supplement earnings from pulpwood cutting and other forestry activities.

If the Nipigon site is not suitable, investigations will be made in other localities until the right place is found. If the experimental village is a success, others will be founded.

Hollingsworth & Whitney Changes

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 2, 1945—The board of directors of Hollingsworth & Whitney Company announce that M. L. Madden has been elected chairman of the board. Mr. Madden has been associated with the company for more than 58 years. He was elected vice president in November 1911, vice president and general manager in January 1918, and had been president since March 1931.

James L. Madden, a vice president since 1941, was elected president of the company to succeed M. L. Madden. L. G. Glazier, controller since 1939, and vice president since 1941, was reelected. Robert Nivison of Winslow, Maine, was elected a vice president. Mr. Nivison has had 41 years of continuous service with the company, and has been manager of mills since May 1916.

At the stockholders' meeting preceding the meeting of the board of directors, H. C. Thayer was reelected treasurer, an office he has held since November, 1927. Herbert G. Fales of New York City was elected a director. Other directors of the company reelected were Walter B. Merlin, Herman W. Vaughan, Louis Oakes, W. Elliott Pratt, Jr., and Amor Hollingsworth.

"Here Is Why" Folder

Successfully meeting the common problem of informing customers of the reasons why deliveries are slower than pre-war and creating a better understanding of the problems faced by the company, has been done by Western Gear Works with plants at Seattle, San Francisco and Los Angeles.

The firm recently issued a four-page, two-color folder titled "Here Is Why" which does an unusually effective job of telling customers the reasons why pre-war service is not possible. It explains the "special assignment" work being done on high priority aircraft, marine and ordnance material.

A copy of the folder may be had by writing to Wayne & Hadley, public relations and advertising manager at Western Gear Works, Seattle 4, Wash.

THE 45th ANNUAL REPORT OF
ST. REGIS PAPER COMPANY
FOR THE YEAR 1944

Shows

1. ***All-out production for Victory.***
2. ***Integration of operations and products.***
3. ***Record sales volume.***
4. ***Diversification of products.***
5. ***Diversification of markets.***
6. ***Re-employment plans for veterans.***
7. ***Importance of wood cellulose products in War and Peace.***

Starting with the trees on owned or leased timberlands, with *operations* and *products* integrated, St. Regis Paper Company and its subsidiaries manufacture and sell a wide range of wood cellulose products. These commodities, industrial in nature and essential in character, include Pulp, Paper, Multiwall Paper Bags, Bag-making and Bag-filling machinery, Plastics and Rayon . . . currently, the entire production is for direct or indirect war use and for essential civilian requirements.

PACKAGING SYSTEMS

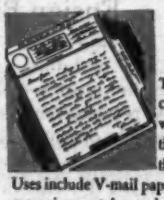
Multiwall Bags are helping deliver the goods on the war front and the home front. Made of several thicknesses of tough kraft paper, these heavy-duty shipping sacks resist moisture, exposure and rough handling . . . are preferred for chemicals, food stuffs, building materials and fertilizers.

Bag Machines . . . Bag-making machinery and a wide range of bag-packing machines are produced by the St. Regis Engineering and Machine Division. They are extensively used in the United States and many foreign countries to save time and manpower for industry.

RAYON

The latest addition to St. Regis family . . . rayon . . . is manufactured by the viscose process at the Skenandoa plant. Skenandoa's production is used for medical and hospital supplies and clothing for our armed forces and civilian populations of allied nations and occupied countries and for essential civilian clothing.

With improved and stronger yarns in the post-war period, Skenandoa will be foremost in the production of rayon for use in clothing, household furnishings, transportation and communication fields.



LIGHTWEIGHT PRINTING PAPERS

These papers provide clean, opaque sheets which require less wood, thereby helping to ease the pulpwood shortage. Uses include V-mail paper, overseas and domestic magazines, catalog and directory papers. Current research points to wider post-war uses.

PANELYTE

The St. Regis Structural Laminated Plastic is reducing weight, saving time and money on electrical and structural parts (molded and fabricated) for the Armed Services, the aviation, automotive, electronics, and refrigerator industries. Panelyte resists corrosion and high temperatures . . . not affected by water, brine, oil or ordinary solvents . . . supplied in paper, fibre glass, fabric, wood, or asbestos bases.

SUMMARY OF CONSOLIDATED INCOME
for the Year Ended December 31, 1944

Net Sales, Royalties, and Rentals	$48,388,277.14
Costs and Expenses	42,798,447.26
Operating Income	5,589,829.88
Income Credits	413,969.22
Gross Income	6,003,799.10
Income Charges	419,150.02
Net Income before Provision for Income and Excess Profits Taxes	5,584,649.08
Provision for Income and Excess Profits Taxes:	
Federal:	
Income taxes . $1,250,000.00	
Excess profits tax (less post-war refund of $116,000.00 and debt-retirement credit of $120,000.00) $2,125,000.00	
Canadian and other foreign taxes (less Canadian post-war refund of $16,216.22) . 169,614.58	
Total	$ 3,544,614.58
Net Income before Deduction of Minority Interests	2,040,034.50
Deduct Minority Interests in Income	186,520.69
Net Income	$ 1,853,513.81

St. Regis Paper Company is in a favorable position to expand its business in all divisions during the years following conclusion of the war. Factors which support this belief are (a) the modernization program, (b) research and new developments, (c) widened acceptance of the company and its subsidiaries, and (d) the great diversity of markets and industries served.

Currently, St. Regis products move directly or indirectly to our Armed Forces and on lend-lease requirements. They also serve 30 major war-supporting industries.

DIRECTORS

J. O. Bulkley — H. R. Lamb
T. H. Cosford — H. S. Lewis
W. DeLong — H. E. Machold
W. K. Dick — C. R. Mahaney
W. J. Dixon — R. B. Maltby
R. K. Ferguson — C. B. Martin
M. F. Ford — J. A. Quinlan
W. H. Versfelt

ST. REGIS PAPER COMPANY

TAGGART CORPORATION . • SKENANDOA RAYON CORP.
ST. REGIS PAPER CO. (CANADA) LTD.
New York 17: 230 Park Avenue
Chicago 1: 230 N. Michigan Ave. — San Francisco 4: 1 Montgomery St.
Baltimore 2: 2601 O'Sullivan Bldg. — Montreal: 924 Canada Cement Bldg.

TAPPI Notes

John G. Turk, formerly of the Masonite Corporation is now a research engineer in the Container Section of the Institute of Paper Chemistry, Appleton, Wis.

E. Russell Lang, formerly of the Calgon Company is now a chemist for the Hall Laboratories, Inc., 1807 E. Olympic Blvd., Los Angeles, Cal.

Ralph Casselman is now with the Technical Division of Higgins Plastics, New Orleans, La.

Vernon L. Tipka is now in the Procurement Division of the Office of the Quartermaster General, Temp. B., Room 2204, 2nd and T streets, S.W., Washington 25, D. C.

Alfred J. Stamm has been appointed Chief of the Division of Derived Products, Forest Products Laboratory, Madison, Wis., succeeding Earl C. Sherrard who died in October 1944.

The TAPPI Maine-New Hampshire Group will hold its spring meeting at the Elwood Hotel, Waterville, Maine, on Friday, May 11, 1945. This full day program will include papers on soda pulp technology, sulphite pulping, sizing problems and election of officers.

M. S. Kantrowitz, technical director of the Government Printing Office, Washington 25, D. C., would like to obtain the following 1944 issues of the Paper Trade Journal to complete his set for binding Jan. 6, March 30, April 13, and April 20. Anyone having these issues to spare should get in touch with Mr. Kantrowitz.

Mill No. 2 at Hinsdale Burned

HINSDALE, N. H., April 2, 1945—Fire swept plant No. 2 of the Robertson Paper Company in Lower Ashuelot on March 25, causing damage estimated by Clarence B. Oneal, owner, at between $50,000 and $75,000. Mr. Oneal said he planned to rebuild the plant.

Chiefly engaged in government work, the small paper mill was gutted by a fire which quickly spread throughout the entire two-story brick building at about 3:45 A.M., Sunday. Four men were reported working on the night shift at the time of the blaze, which spread so rapidly that they had no time to change from their work clothes or get money from other clothes in the lockers.

The paper mill is one of three of the Robertson company and was only recently taken over by Mr. Oneal, who purchased the half interest of Frank W. Robertson to become sole owner. The mill employs 18 men and the plant is operated by a son, Roland Oneal, manager, and Alton Stephens, superintendent.

Mr. Oneal said that the buildings and contents were partially covered by insurance and that it would be some time before he could resume operation because of the difficulty in replacing machinery. He has been associated with the company since 1916. The plant was built in 1903 by E. C. Robertson and son.

Sandy Hill To Expand Office Building

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., April 1, 1945—A permit has been granted to the Sandy Hill Iron and Brass Works for the construction of a new addition to their office building in this village. The new structure will be two stories high with all modern conveniences and will cost approximately $13,000. It is understood that the contract has already been awarded and construction is expected to start immediately.

Charge Price Violation

Bench warrants were issued by the United States District Court for the middle District of Pennsylvania against a former paper mill operator and a waste paper dealer on charges of conspiracy to violate OPA Regulations governing the sale of waste paper, it was announced by Daniel P. Woolley, Regional OPA Administrator.

The Grand Jury for the Middle District of Pennsylvania returned indictments against: Harry K. Williamson, Williamson Pulp and Paper Company, Harry B. Slavin, t/a Penn Paper Trading Company, all formerly of Austin, Pa.

The defendants were charged with having bought and sold a large quantity of waste paper which had been upgraded in order to obtain higher prices.

The cases were presented by Arthur A. Maguire, Assistant U. S. Attorney, who represented Frederick V. Follmer, U. S. Attorney for the Middle District of Pennsylvania. Presentation of evidence to the U. S. Attorney was made under the direction of Morton R. Sarett, Regional Enforcement Attorney.

Mr. Woolley pointed out that Slavin had sold various grades of wastepaper to the Williamson Pulp and Paper Company at prices far above those prescribed by MPR 30 and that Williamson at that time vice president and general manager of the mill, approved the purchases in each case.

Ensign Bigelow Missing in Action

Ensign Henry Forbes Bigelow, Jr., serving on the U. S. submarine, "Albacore," son of Mr. and Mrs. Henry Forbes Bigelow, of South Lancaster, Mass., is reported missing following action, on the vessel, which disappeared in the waters of the Pacific, with 65 men aboard, according to an official announcement by the U. S. Navy Department.

The "Albacore" was the 41st submarine lost by the United States in this war.

Ensign Bigelow was given his commission in the R. O. T. C., at Harvard University, in October, 1943, and performed submarine duty in the Carribean. Last October he was assigned as one of the officers of the missing "Albacore." He was 22 years of age.

Appointed by Garrett-Buchanan Co.

PHILADELPHIA, Pa., April 2, 1945 — Garrett-Buchanan Company announces the appointment April 1 of Howard Satterthwaite, as manager of its wholesale stationers' department. This department confines its efforts to the problems of the stationers. The company found the wisdom of departmentalizing its business many years ago. Listed among the company's present departments are: announcements; book paper; cardboard; cover paper; envelopes; fine papers; greeting cards; school supplies specialties; twine; wrappings—then the baby of them all, wholesale stationers' department.

Paper Men Join Controllers Institute

Clarence L. Darby, secretary of the Birmingham Paper Company, Inc., Birmingham, Ala., John V. Bannon, chief accountant of the Automatic Paper Machinery Company, Inc., Hoboken, N. J., and Gus T. Wegner, comptroller of the Florida Pulp and Paper Company, Pensacola, Fla., have been elected to membership in the Controllers Institute of America.

an Old Product

TAKES ON NEW TASKS

Plain, old-fashioned Bicarbonate of Soda is an amazingly versatile chemical product. Household remedy for many common ills . . . key ingredient for dozens of pharmaceuticals . . . basic in baking powder and millers' choice for self-rising flour—"bi-carb" plays its homely, useful roles.

"Bi-carb" is just as essential in hundreds of industrial operations . . . is the active ingredient in several types of fire fighting equipment . . . helps tan leather . . . prevents sap stain in lumber . . . performs importantly in the production of plastics, sponge rubber and in heat-treatment of special steels . . . neutralizes acids and removes caustic.

Through Mathieson Research, "bi-carb" assumes great new importance in the textile industry. Commercially developed, Mathieson's new process for removing caustic with "bi-carb" speeds up production, lowers cost, eliminates acid's disadvantages . . . removes caustic by *changing* it into sodium carbonate (soda ash).

The Mathieson Research and Technical Staffs are also applying "bi-carb" experience to certain phases of the paper industry. Perhaps their accumulated knowledge of "bi-carb's" versatility may hold important meaning for you—may bring to light possibilities you haven't thought of. *Co-operation means progress for all.*

Mathieson
CHEMICALS

THE MATHIESON ALKALI WORKS (INC.) 60 EAST 42nd ST., NEW YORK 17, N. Y.

BICARBONATE OF SODA . . . CAUSTIC SODA . . . SODA ASH . . . LIQUID CHLORINE . . . CHLORINE DIOXIDE
AMMONIA, ANHYDROUS & AQUA . . . . H T H PRODUCTS . . . . FUSED ALKALI PRODUCTS . . . . SYNTHETIC SALT
CAKE . . . . DRY ICE . . . . CARBONIC GAS . . . . SODIUM CHLORITE PRODUCTS . . . . SODIUM METHYLATE

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending March 31, 1945

STOCKS

	High	Low	Last
A. P. W.	5	4¾	4¾
Armstrong Cork Co.	44	43⅞	43½
Celotex Corp.	15¾	15	15⅛
Celotex Corp., pf.	20¾	19¾	19½
Certain-Teed Products Corp.	8¼	7½	8⅛
Certain-Teed Products Corp., pf.	148	145½	148
Champion Paper & Fibre Co.	31¼	30	31¼
Champion Paper & Fibre Co., pf.	113	111½	112
Congoleum Nairn Co.	27	26⅛	26⅛
Container Corp. of America	27¼	26⅝	26¾
Continental-Diamond Fibre Co.	11⅜	10¾	11¼
Crown-Zellerbach Co.	22¾	20⅜	22⅜
Crown-Zellerbach Co., pf.	104	103½	104
Dixie Cup Co.	18⅛	17½	17½
Dixie Cup Co.—A	48½	48	48½
Flintkote Co.	26½	24⅞	26
Flintkote Co., pf.	105¾	105¾	105¾
Robert Gair	5¾	5⅛	5½
Robert Gair, pf.	16¾	16	16¾
International Paper Co.	23⅞	21½	23⅝
International Paper Co., pf.	90	87½	90
Johns-Manville Corp.	107½	104	107½
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	43½	41¾	43½
Mac Andrews & Forbes	32¼	32	32¼
Mac Andrews & Forbes, pf.	149½	149	149½
Masonite Corp.	41½	40	41¼
Mead Corp.	13	12¾	12⅞
Mead Corp., pf. A—6%	...	...	...
Mead Corp., pf. B—5½%	99	98	99
National Container Corp.	14⅛	13⅞	14⅛
Paraffine Companies, Inc.	65½	64	64
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	17¾	16	17¾
Rayonier, Inc., pf.	36⅝	35	36½
Ruberoid Co.	34⅛	33	34⅛
Scott Paper Co.	...	...	...
Scott Paper Co., pf.	...	...	...
Sutherland Paper Co.	...	...	...
Union Bag & Paper Corp.	15¾	14½	15½
United Paperboard Co.	6⅜	6⅛	6⅜
U. S. Gypsum Co.	80	79	80
U. S. Gypsum Co., pf.	186	186	186
West Virginia Pulp & Paper Co.	23¾	23	23¾
West Virginia Pulp & Paper Co., pf.	111	110½	111

BONDS

Abitibi Pulp & Paper Co. 5s '53	101	100	101
Celotex Corp. 3¾ '55	...	...	...
Certain-Teed Products Corp. 5½s '48	100⅜	100¼	100⅜
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	110	109⅝	109⅝
International Paper Co. 5s '47	104¾	104	104¼
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending March 31, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	36½	35¼	36
Hummel-Ross Fibre Corp.	7⅝	7⅛	7⅛
St. Regis Paper Co.	6⅞	5¾	6⅞
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	6	6	6

BONDS

American Writing Paper Co. 6s '61	...	...	...

Kimberly-Clark Profits Off

Kimberly-Clark Corporation, Neenah, Wis., netted $1,853,000 or $3.09 per share on common stock for the year ending December 31, 1944, Cola G. Parker, president, reported March 27. The previous year's earnings were $1,801,000, or $3.69 a share. The decrease in per share earnings was due to an increase in the number of outstanding common shares during 1944.

Sales in 1944 increased to $61,300,000, a gain of 6.6% over 1943, Mr. Parker said, attributing the rise to a gain in volume on the firm's regular paper products.

Eddy Corp. Nets $4.74

The Eddy Paper Corporation, for 1944, reports a net income of $779,364, or $4.74 a share, including post-war refund, against $591,613, or $3.60 a share, for 1943; net sales $16,020,183, compared with $14,369,391.

To Put Through Abitibi Plan

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 2, 1945—Because Premier George Drew of Ontario took a leading part in getting together the bondholders and shareholders of the various classes of stock of Abitibi Power and Paper Company, it was felt by some that his rather precipitate dissolution of the Ontario Legislature recently would perhaps delay the proceedings, at least until after another election, and, in the event of a change in the government, perhaps indefinitely.

However, it is learned on good authority that negotiations will proceed and that there is not likely to be any delay. Committees representing all groups of security holders have agreed to the proposed plan, it is pointed out, and the function of Premier Drew, representing the Ontario government, and the Hughes Committee appointed by his government, was merely to facilitate in the reaching of a settlement. Completion of this plan is not dependent on government action, but on obtaining the approval of the individual security holders. The Hughes committee was appointed to negotiate with the interested parties with a view to arriving at an agreement whereby the receivership of Abitibi would be terminated. Since agreement has been reached, the government is not now so much concerned.

The detailed plan of reorganization, including the supplementary trust deed, the new preferred stock provisions and supplementary letters patent have all been drawn up and are not likely to show much change in their final form, it is understood. No date has been fixed as yet for the meeting of each class of security holders to obtain their approval.

The Abitibi Moratorium Act, which will lapse in June of this year, is not expected to have any effect on the reorganization plan. The Act was to stay proceedings under the mortgage action so as to give all parties an opportunity of considering a reorganization plan.

Brown Co. Issues Report

The Brown Company shows consolidated net profit, after taxes, of $1,298,244 for the year ended November 30, 1944 against $1,126,415 for 1943 in its annual report released by Frederic G. Coburn, President. Brown Company, the parent company, shows net profit after taxes of $565,168 against $354,895 in 1943. Brown Corporation, the wholly owned Canadian pulp producing subsidiary, shows $784,116 against $883,086 for the previous year.

Consolidated sales of $32,328,663 were $1,330,732 larger than in 1943. The working capital of Brown Company increased $365,966 to $7,479,710 and that of Brown Corporation increased $227,415 to $6,937,577. Earnings in 1944 available for bond interest, computed according to the formula in the indenture securing the general mortgage bonds, were adequate to guarantee payment of interest due on June 1 and December 1, 1945, the report points out.

Operations during 1944 showed no significant changes from those of the preceding year, according to the report, the products of both Company and Corporation being devoted principally to governmental requirements or essential civilian needs. No difficult reconversion problems are anticipated since wartime products are essentially the same as those produced in peace times.

Plans for extensive improvement of plants at Berlin, N. H. described in the 1943 report have been

The "Pacemaker"

Designers of postwar Winders, our own included, must do some very deep thinking to surpass the efficient design features incorporated in CAMACHINE 20 as illustrated above.

CAMACHINE 20 sets the pace for speed and efficiency of operation, quality of rewound rolls, low maintenance cost.

CAMACHINE 20 is easy to thread and in running handles the web gently, resulting in fewer web breaks.

Automatic counterweighting of both riding roller and rewind shaft assures the good, firm start necessary for winding rolls of uniform density from the core out.

Write today for illustrated literature describing CAMACHINE 20—"The Pacemaker". It should be included in your postwar plans.

CAMERON MACHINE COMPANY - 61 POPLAR ST. BROOKLYN 2, N. Y.

Midwest Office: 111 W. Monroe Street, Chicago 3, Ill.

vigorously prosecuted throughout the year. Reconstruction Finance Corporation has authorized an additional loan which, with prior authorizations, will provide a total of $4,000,000 new money toward financing these improvements. The Company has also accumulated $1,560,000 in a special deposit for this purpose. Work is now in progress on a large new dryer at the La Tuque, Canada pulp mill, and some of the long-range construction projects there have already been completed.

"The fiscal year 1945 to date," Mr. Coburn states, "is showing improved earnings in comparison with the corresponding period for 1944, but the manifold uncertainties affecting prices and costs make it impossible at this time to forecast the results for the entire year."

Price Bros. Issues Report

MONTREAL, Que., April 2, 1945—The annual report of Price Brothers and Company Limited for the year ended December 31, 1944, indicates an expansion of the operating profit, but due to increased taxes and a provision of $500,000 for employee pensions out of the year's earnings, the net profit was shown lower. A strong working capital position was maintained, though the amount is down in reflection of substantial reduction in funded debt.

Operating profit was $6,376,692 in 1944 against $5,755,356 in 1943, an increase of $621,000. After providing the funded debt interest, $500,000 for employee pensions (a new item), depreciation and depletion of $1,720,000 against $2,060,000, and taxes of $2,455,000 against $1,734,000 (exclusive of refundable portion), net profit was $1,418,335 against $1,658,955.

Above net profit is equal, after preferred dividends, to $2.02 a share on 547,857 no-par-value common shares in 1944, against $2.40 a share in 1943. These profits included refundable portions equal to 63 cents a share in 1944 and 20 cents in 1943.

A dividend of $1.50 a share was paid on the common stock on May 1, 1944, and a similar dividend has been declared payable May 1, next.

After deducting the 1944 dividend, earned surplus is shown at $5,402,098 against $5,165,264 last year.

A profit of nearly $300,000, reflecting increase in value of investments, was credited direct to capital surplus.

Certain-teed Nets $21.58

The Certain-teed Products Corporation and wholly owned subsidiaries, for 1944, reports a profit of $692,169, or $21.58 a share on 32,070 shares of $6 preferred stock, against 1943 net profit of $750,249, or $11.13 each on 67,373 preferred shares; net sales, $21,184,761 compared with $19,944,907. Unpaid cumulative dividends on preferred stock as of December 31 last were $46.50 a share. On March 1 company retired $1,000,000 of its outstanding twenty-year 5½% sinking fund debentures. Reduction in funded debt will mean annual saving in interest charges of $170,500. Company states plans are under way to refund balance of funded debt which matures on March 1, 1948.

Nekoosa-Edwards Earns $7.85

The Nekoosa-Edwards Paper Company, for 1944, reports a net income of $494,371, or $7.85 a common share, against 1943 net of $552,192 or $8.76 a share; net sales, $11,266,572 against $10,037,589.

International Earns $8,447,953

In 1944 consolidated net profits of the International Paper Company and its subsidiaries amounted to $8,447,953 as compared with $8,413,808 in 1943. Total sales and other income amounted to $237,784,254 in 1944, an increase of 7% over the corresponding figure for 1943.

During 1944 International Paper Company and its subsidiaries produced a total of 2,469,997 tons of paper, container board and pulp as compared with 2,363,511 tons in 1943, an increase of 4.5%. Tonnage by grades was as follows:

	1944	1943
United States:		
Kraft container board (unbleached)	866,073	819,964
Kraft wrapping and bag paper (unbleached)	108,626	124,753
Bleached kraft paper and board	148,029	139,814
Unbleached kraft specialty papers	151,317	122,992
Kraft pulp for sale	69,996	68,640
Total kraft board, paper and pulp	1,344,041	1,276,163
Groundwood specialty papers	173,991	186,924
Book and bond papers	121,002	127,948
Other pulp and paper grades	34,186	27,827
Total United States	1,673,220	1,618,862
Canada:		
Newsprint	512,359	457,066
Dissolving pulp	144,988	136,227
Other sulphite pulp	128,899	136,759
Other pulp and paper grades	10,531	14,597
Total Canada	796,777	744,649
Total	2,469,997	2,363,511

The pulp production figures shown above include tonnage shipped to other mills of the companies for their own use amounting to 45,125 tons in 1944 and 47,940 tons in 1943.

The following is a summary of the tonnage of the principal converted products manufactured by the Company and its subsidiaries.

	1944	1943
Shipping containers (domestic and overseas)	190,054	180,502
Grocery and miscellaneous bags	52,121	63,430
Heavy duty multi-wall bags	49,613	40,323
Insulating board (Canada)	16,444	18,123
Total	308,232	302,378

Flintkote Elects Vice Presidents

Clifton W. Gregg, who is also treasurer and a director, and George K. McKenzie, who is also secretary, were elected vice presidents of the Flintkote Company, it was announced yesterday by I. J. Harvey Jr., president. The company has acquired the Tile-Tex Company of Chicago Heights, Ill., maker of asphalt tile wall and floor products.

Gaylord Earns Less

Consolidated gross sales of the Gaylord Container Corporation, St. Louis, for 1944 were $36,389,088, highest in the company's history, a report showed today. Net profits for 1944 were $1,075,806, or $27,291 under the previous year, the company reported.

Boston Bagging Market Strong

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 2, 1945—The market on bagging is strong, with the price of scrap burlap up 25 points, or to $3.00 for domestic and $3.25 for South American. Australian wool pouches have risen 25 to 50 points, reaching $3.25 and $3.50. Soft jute ropes and scrap sisal are firm. All waste paper is selling at ceiling prices and difficult to secure. There is a shortage of roofing rags to such an extent that the Government may import a quantity through the Foreign Economic Administration. The matter is being considered by Washington.

With this New Clutch YOU CAN SAVE

1. Space
2. Maintenance
3. Repair Cost
4. TIME

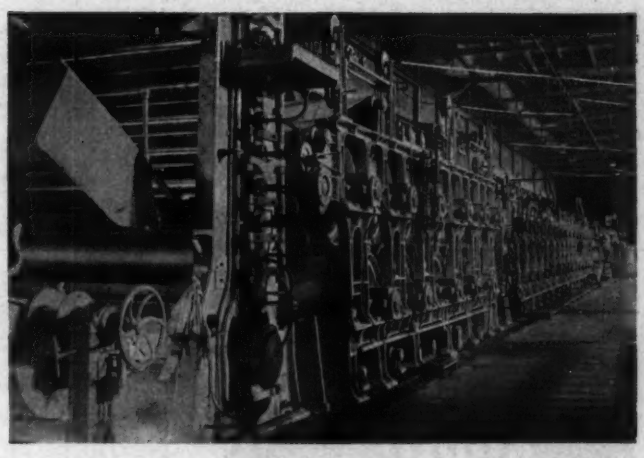
The FAWICK Airflex Clutch

1. **Saves Space because it is compact and requires no springs, arms or toggles. It controls power by air.**
2. **Saves Maintenance because it requires no adjustments, no lubrication. Even corrects automatically for misalignment.**
3. **Saves Repair Costs because there are no parts to break or wear out. Has torsional flexibility—absorbs shocks and vibration.**
4. **Saves TIME because it permits dependable *full-time* operation, in the heaviest service.**

• • •

The Fawick Airflex Clutch has proved its performance in hundreds of Naval vessels under combat conditions—and for heavy-duty drives throughout industry.

Ask our Engineering Department for recommendations.



Modern Paper Mill driven through Fawick Airflex Clutches. Smooth, slow starts, cushioned by air, protect the web. Maintenance costs greatly reduced—no clutch lubrication required.

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In Canada, **Renold-Coventry Ltd., Montreal, Toronto, Vancouver**

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FAWICK *Airflex* CLUTCH

POWER CONTROLLED BY AIR

Paper CIO Holds Conference

A conference of the Paper Workers Organizing Committee — CIO, attended by that organization's officers, ten regional directors of the National CIO, and the Michigan State CIO Council Chairman, held a ten-hour session at the PWOC's offices on March 27, 1945. During the luncheon at the Hotel Hollenden, PWOC Chairman Allan S. Haywood, who is also vice-president and director of organization of the National CIO, told of his recent trip to England as a delegate to the World Trade Union Conference.

Detailed reports on PWOC activities in the past three months were presented. During that period, PWOC Director Walter Smethurst reported, the CIO paper workers won employee representation elections at the Container Division of the International Paper Company, Chicago, the paper mill of the Quaker Oats Company, Pekin, Ill., H. Bettis Box Company, Zanesville, Ohio, Hollis Press, New York City, and the Elkhart Stationery Company, Elkhart, Ind. A dozen large scale organizing campaigns were reported to be in progress in Michigan, Illinois, Ohio, New York, New Jersey, Pennsylvania, and Virginia. Several other large scale organizing drives were planned and a number of small ones were reported to be in progress. PWOC and CIO officers promised 10,000 new PWOC members in the next three months.

More than twenty new agreements were negotiated by PWOC-CIO representatives since the beginning of the year. Many benefits were added to the existing gains made by PWOC for American paper workers, including substantial wage increases, paid vacations and holidays, and company-financed insurance plans.

The conference decided to embark on an intensive education program. The ninety PWOC-CIO local unions, representing employees at 130 paper mills and plants under agreement with the union, are to be supplied with educational material and periodic lectures. An Education Institute will be held in June, in conjunction with the next executive conference of the PWOC-CIO.

PWOC Secretary-Treasurer Harry Sayre reported that the Organization's finances were in excellent condition.

Before concluding the conference, Chairman Allan S. Haywood presented a detailed report on the World Trade Union Conference. The Paper Workers Organizing Committee voted to express its appreciation for the leadership the CIO took at this world meeting of labor leaders. The PWOC conference also voted to condemn the policies of the Wage Stabilization Director. The Little Steel Formula was likewise condemned.

To Start Plant at Paducah

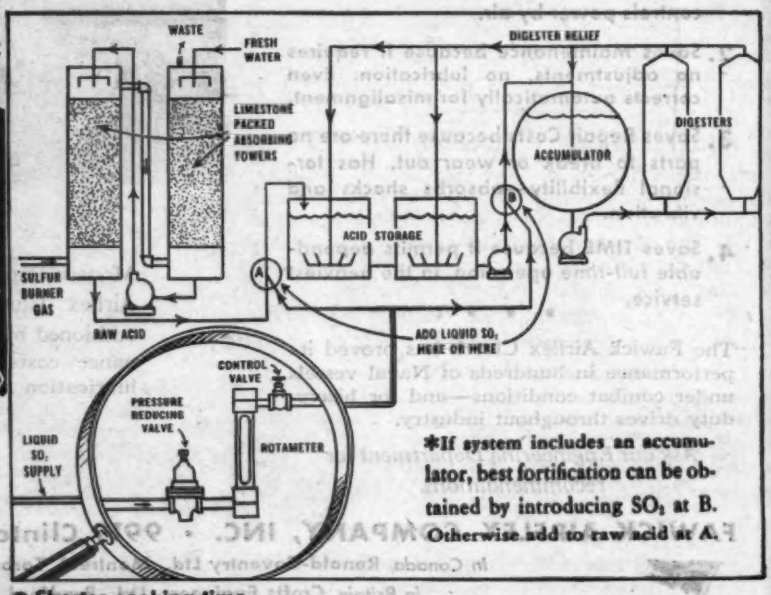
PADUCAH, Ky., April 2, 1945—Necessary repairs are being rushed to completion on the Katterjohn building, 1018 Jefferson street, which will be occupied by the Universal Paper Products Company.

Officials of the company are here to direct preparations of the building and to employ workers. The company has advertised for three maintenance men, an office girl, and both men and women to work in the plant. The company expects to employ around 45 persons to begin operations, and will add more later if expansion plans are carried out.

The firm manufactures paper cups and other containers. Its headquarters are in Chicago.

Mr. Sulphite Pulp Mill Operator:

that ADDITIONAL FREE SO_2 you need is easy... this ANSUL way



*If system includes an accumulator, best fortification can be obtained by introducing SO_2 at B. Otherwise add to raw acid at A.

Install an Ansul constant SO_2 concentration system to augment your present capacity.

It's easy to set up, clean to operate, and efficient and economical to use.

Ansul SO_2 is quickly and completely absorbed because of its purity—99.9+% (by wt.) pure.

The higher SO_2 concentration that this system provides makes possible:

- Shorter cooking time
- Accelerated penetration
- Speedier green wood cooks
- Improved digester schedules
- Increased production rate

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To Make Nitrating Pulps at Everett

EVERETT, Wash., March 26, 1945 — Conversion from the manufacture of paper grades of pulp to the manufacture of nitrating pulp will go into effect at the Everett mill of the Weyerhaeuser Timber Company, pulp division, about July 1, it is announced by Russell LeRoux, resident manager. Construction of three additions to the mill, costing a total of $500,000 and made of steel, concrete and brick, has been started under a directive of the War Production board and they will be completed on or about April 1, at which time installation of equipment will begin, Mr. LeRoux states.

The pulp and paper grade now being manufactured at the mill is being used in the war effort. The nitrating pulp will be shipped to a nitrating plant for conversion into gunpowder.

The mill will produce 230 tons of nitrating pulp a day and will operate 24 hours a day, seven days a week and will require the services of 55 additional employees, about half of which will be women, bringing the total number of employes up to approximately 330, Mr. LeRoux says.

There will be an addition to the bleach plant 40 by 80 feet, three stories high; an addition to the screen plant, 61 by 72 feet, one story high, and an addition to the water filtering plant. Two more sand filters will be added to the water filtering plant, which will have a total capacity of about 26 million gallons of water every 24 hours, an increase of six million gallons a day over the present usage, Mr. LeRoux states.

The additions are being constructed by the Howard S. Wright Construction Company of Seattle. The engineer is O. C. Schoemwerk, consulting engineer of the Weyerhaeuser Timber Company, pulp division, who is being assisted by G. F. Alcorn, plant engineer.

Amends Containerboard Order

[FROM OUR REGULAR CORRESPONDENT]

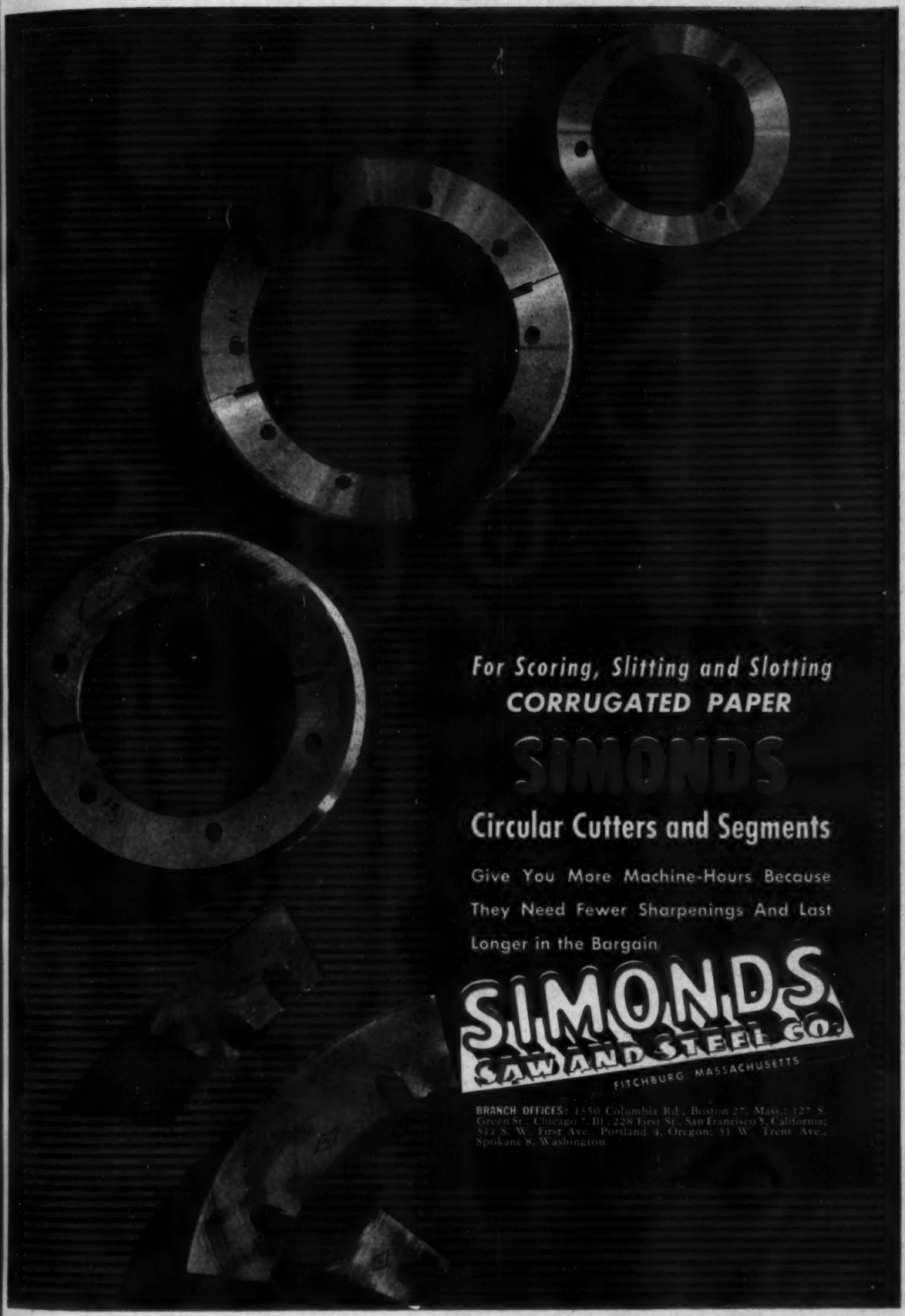
WASHINGTON, D. C., April 4, 1945—Under an amendment to Containerboard Conservation Order M-290, issued today, containerboard producers must accept all basic or War Production Board certified orders received after the seventh of each month, during the first two months of each quarter, up to at least a third of their production in the corresponding quarter of 1944, WPB Paperboard Division officials stated today.

However, until the seventh day of each month, producers may seek their established customers and obtain orders with specifications that they can fill most economically, WPB said. Provision is made for the use of directions to increase the tonnage of basic orders, which must be accepted when additional facilities or raw materials make it feasible, and to reduce these requirements where the opposite is true.

In order to make sure that a backlog of orders from favored customers will not be built up, a monthly limitation of 36⅔% of the quarterly basic containerboard authorization is put on the placement of orders by each authorized converter, it was explained.

Hereafter no producer may manufacture any paperboard, other than containerboard, during any calendar quarter, unless the total tonnage of containerboard produced in that quarter is as great as that produced in the corresponding quarter of 1944.

A prohibition is placed upon the use of kraft paper as corrugating media in other than V and W Boxes.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PAPER
TRADE JOURNAL
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Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

EMPIRE STATE SECTION. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

CHICAGO PROFESSIONAL PAPER GROUP. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

WOOD PULP SUPPLY

Wood pulp allocations for the current second quarter indicate a much shorter paper supply situation for civilian consumption. The reduction of pulp for the manufacture of paper, amounting to 103,000 tons, is a sharp curtailment. The allocation estimate for paperboard amounts to 21,000 less tons. In consideration of the widely reported increase in shipments of paper to foreign countries, this deep cut in the civilian paper supply is the subject of current speculation, the occasion for increasing concern and of growing criticism.

The charted trend of the domestic wood pulp situation, reported by the Department of Commerce, indicates a continued decline in the total supplies of all grades. The inventory trend of bleached sulphite continued upward in January, as did the miscellaneous grades. Total wood pulp output, all grades, in January, 1945 aggregated 866,000 tons, compared with 812,000 tons in January, 1944 and with 872,000 tons in November, 1944. Total inventories were 323,000 tons, compared with 391,000 tons in January, 1944.

January production of bleached sulphite reflected an increase of 19,000 tons over January, 1944, with high alpha and dissolving grades accounting for 44,000 tons, while grades other than the above totaled 92,000 tons. Output for January, 1945 of unbleached sulphite was 74,000 tons, compared with 76,000 tons in January, 1944; unbleached sulphate, 301,000 tons, compared with 207,000 tons in 1944; bleached sulphate, 57,000 tons, compared with 52,000 tons in 1944; semi-bleached sulphate, 13,000 tons, compared with 10,000 tons in 1944; groundwood, 140,000 tons, compared with 131,000 tons in 1944; and miscellaneous, 109,000 tons, in January, 1945, compared with January 1944.

Consumption of wood pulp, reported by the Department, totaled 938,000 tons in January, 1945, compared with 907,000 tons in January, 1944, and with 915,000 tons in 1943. In November, 1944, total consumption was 957,000 tons. Total consumption of bleached sulphite was 162,000 tons in January, 1945, compared with 907,000 tons in January, 1944; 11,000 more tons of high alpha and dissolving grades were consumed in January, 1945, above 1944; 1,000 more tons of bleached sulphate; 2,000 more tons of soda pulp; 1,000 more tons of groundwood, and 22,000 more tons of the miscellaneous grades were consumed in January, 1945, compared with January, 1944. Exports of wood pulp totaled 8,000 tons in January, 1945, compared with 11,000 tons in 1944, and with 14,000 tons in January, 1943.

Total wood pulp allocations for all uses in the current quarter of 2,843,000 tons are 71,000 tons less than in the first, 1945 quarter. The percentages of decrease of wood pulp allocated for the manufacture of major grades of paper are as follows: book and groundwood printing, 9.9%; fine, 4.3%; coarse, 8.3%; shipping sack, 5.2%; sanitary, 5.7,% and tissue, 13.8%. In commenting on this supply situation the Department of Commerce states that, the essentiality of wood pulp products both to the military and to many segments of civilian economy means that efforts must be made in two directions; first to stimulate production and secondly to conserve on the less important uses and direct the flow of available supplies to the more essential needs. To assist in production, pulpwood cutting and transportation have been placed upon the Production Urgency Committee's list. The consumption of some grades of paper, such as kraft wrapping, will probably be more carefully controlled to avoid use of war-needed supplies in civilian channels. As supplies of paper grow tighter so will the control on distribution and consumption. Additional educational programs directed toward voluntary conservation and salvage of paper can be anticipated.

In commenting on the deteriorating inventory position in wood pulp, the Department states that freight embargoes and difficult trucking conditions in the northern region during January were undoubtedly a contributory factor in the further decline in wood pulp inventories, already down to a bare working minimum. January inventories declined 3% under December, 1944, and were about 17% below January 1944, and 60% under January, 1943. Stocks have declined about 21% from the moderately high level of inventories in the middle of 1944. Actually, inventories are at rock bottom and in some instances must be built up again to forestall many more paper mills having to cut down on their operations, or even shut down from time to time.

Production in January, the report goes on to state, increased 9% over December and was 7% over January of last year, while consumption likewise increased, gaining 7% over December, and 3% over January, 1944. Imports were the same as December,

though somewhat lower than the comparable 1944 month. Exports on the other hand declined 33% under December and 27% under January, 1944. New supply (production plus imports) was again somewhat under consumption plus exports, though the difference was not as great as in December or in January, 1944.

The latest industry report of the Department of Commerce points out that, a smaller estimated net new supply of wood pulp has resulted by the following factors: increased requirements of pulp for non-paper use, especially nitration; increased requirements for containerboard and building board for direct or indirect military purposes; shortages in sulphite and sulphate pulp, thereby nullifying possibilities of producing and using more groundwood which is not usable in general unless combined with long fiber; rock-bottom pulp inventories meaning no further withdrawals for current consumption; estimates that pulpwood receipts in the first six months would be 350,000 cords less than consumption if mills operated at proposed higher levels, which would reduce pulpwood inventories to below 2,500,000 cords at the end of June or approximately the critically low point reached the same time in 1943; and lack of assurance that waste paper receipts can be materially increased over the monthly average of 1944 or, even kept at a 578,000 monthly ton level.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Feb. 17	91.0	Feb. 19	89.2
Feb. 24	89.7	Feb. 26	87.7
Mar. 3	87.8	Mar. 4	87.0
Mar. 10	87.7	Mar. 11	88.5
Mar. 17	89.4	Mar. 18	90.7
Mar. 24	92.1	Mar. 25	88.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	90.1	92.5	90.6	82.4	88.1
1945	86.7	*89.4*											

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	66.8	79.4	85.9	88.9	103.7	88.6	88.6	*88.2*
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

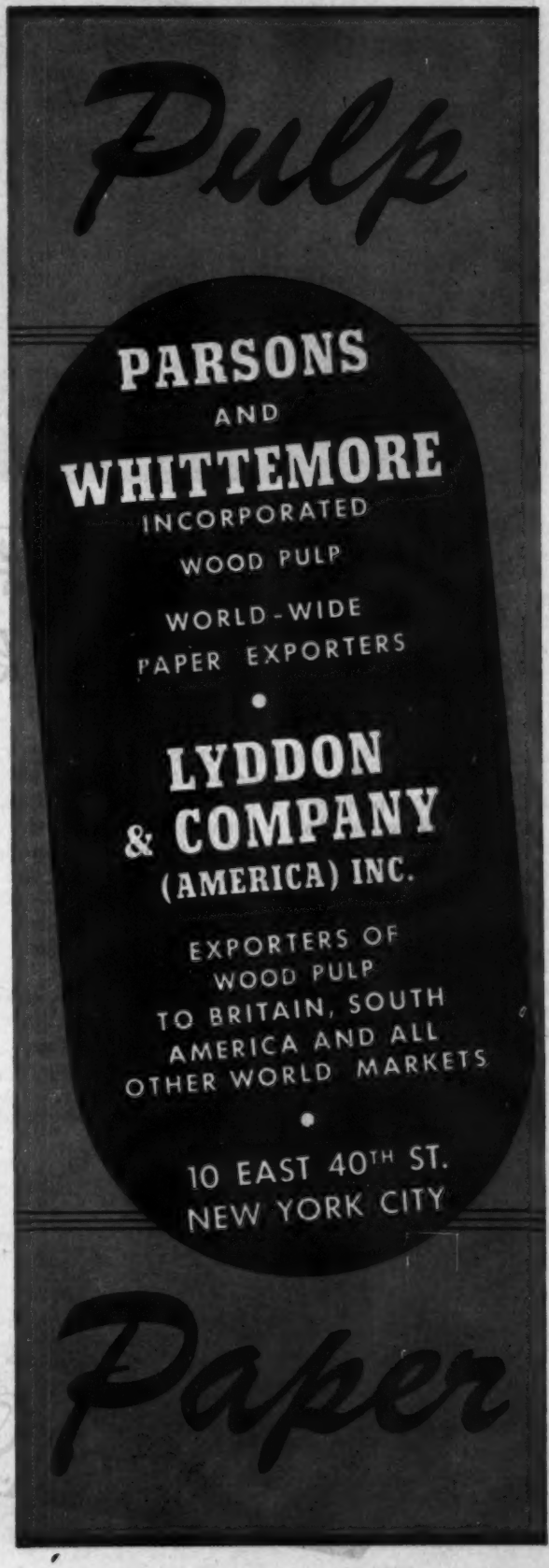
*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
Feb. 17	93	Feb. 19	96
Feb. 24	97	Feb. 26	93
Mar. 3	96	Mar. 4	95
Mar. 10	94	Mar. 11	95
Mar. 17	95	Mar. 18	95
Mar. 24	99	Mar. 25	97

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95											

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



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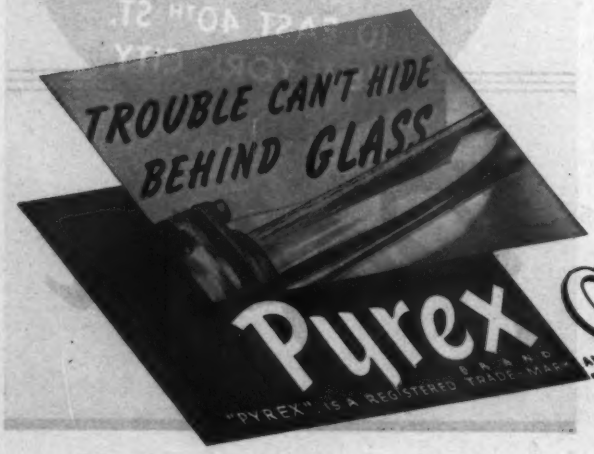

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Edited by R. G. Macdonald, Secretary

Observations on the Difficulties and Methods of Pen Ruling*

By F. S. Klein[1]

Abstract

After making a limited survey of rulers' materials, and methods, an attempt is made to outline the general practices and correlate them with some of the difficulties encountered in pen ruling. Ruling troubles are accentuated by the variation in techniques used by rulers, and by those paper qualities which are the result of ultimate use requirement and general papermaking practices which produce paper not easily adaptable to pen ruling.

Under present day standards of high speed printing, the practice of pen ruling is likely to be considered a rather antiquated process with the limited production and performance generally associated with "tailor-made" jobs. It is quite likely that because of this relationship to newer methods of business-form manufacture that pen ruling in the average stationery or printing establishment plays a minor and obscure role. Some mills do their own ruling and form-making and in these cases, ruling difficulties are not as prevalent as in the case of the independent ruler who works with whatever type or grade of paper the customer has chosen. As a general rule, rulers identify papers by name or watermark, are unfamiliar with variations in fiber-types and sizings and in general have little access to outside information concerning changes in papermaking. Since there is little or no literature available on pen ruling, the average ruler is forced to rely on his own past experience or on what information he can get by word of mouth from printers, papermakers, and other rulers.

This situation has naturally led to the establishment of many individual methods and techniques in pen ruling which are the result of years of trial and error and general habit and routine. Such circumstances obviously lead to difficulties when any attempt is made to inquire into the cause of what few types of trouble the ruler has. The ordinary printer's difficulties of moisture, humidity, and register are ordinarily of not much concern to the ruler, since with his slower speed and feed and guide arrangements, he can usually compensate for small variables which hamper the high-speed printer.

Since many of the ruler's difficulties hinge upon his individual methods in handling equipment and materials, a small survey has been made of rulers' materials and practices to discover what standard or universal practices exist. This survey pretends to be neither scientific nor complete, but such information as it contains is presented for what it is worth in relation to the ruling difficulty with which it is connected. There were some general indications of standardized ink-mixing and equipment handling, but there were also indications of the use of individual techniques and formulations in cases where difficulties were encountered.

Skipping

Probably the most common ruling difficulty is that of skipping or broken lines. The obvious cause is poor ink flow which in turn is caused by a poor ink solution, faulty feeding equipment, or defects in the paper surface.

Ink

Of the rulers questioned, about 80% used regular city water in making up ink solutions, the remainder used distilled water. All of those questioned bought their ink powders from nationally known suppliers. As far as can be learned, these are usually dyes of the acid type and under ordinary conditions should cause no trouble since acid dyes are usually the easiest to dissolve and are as a whole least sensitive to heat and hard water conditions. Only 10% of the rulers ever filtered their ink solutions. In some cases, city water has been found to contain slime forming bacteria which naturally results in clogging of the flannels, and worsteds used for ink feeding. Since these flannels and worsteds are all wool, they are naturally susceptible to attacks by those bacteria which attack wool, and the use of germicides which help prolong papermachine felt-life are also helpful in preserving the ruler's equipment of this nature. The safest and easiest products to use are phenol derivatives, although some rulers use formaldehyde. When these conditions are exceptionally bad, it has been found necessary to keep the flannels and worsteds in treated water to prevent slime growth.

In general most acid dyes will dissolve easily and completely in hot water of about 160 to 180°F. Ink powder suppliers recommend the use of distilled water with soft water as the next best choice. It is best to allow the ink solution to stand over night while covered and decant the top portion and throw away the sediment. The ink can be filtered through a fine cloth or a wick should water conditions be such

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Chemist, Byron Weston Co., Dalton, Mass.

that unusually heavy precipitates form. This latter procedure naturally causes some loss of dye but in extreme cases is easily worth it. Most ink solutions will keep indefinitely in a closed container, but under the practical operating conditions of most ruling plants, it is safer to make up a 0.1 of 1% solution of the dye and dilute it to the desired strength for use on the ruling machine.

Once a clear and stable ink solution is assured the next most likely difficulty is the ink-feeding equipment.

INK-FEEDING

The survey indicated that 75% of the rulers washed flannels and worsteds frequently. The general practice seems to be to keep these materials immersed in ink solutions when not in use. For short periods of time, this probably does no harm, but in cases where slime can form or where dirt has access to the ink solution, it can be troublesome. As a general rule, pens are washed after each run and cleaned or sharpened with emery cloth at the start of each job. The setting of the pens is naturally important, and a little time and care in making sure the tips of the pens are in complete contact with the sheet are well worth the effort.

Some cases of pen clogging have been traced to dirty blankets. Only about one third of the rulers questioned ever washed or cleaned their blankets. Most of the remainder maintained that the pens were always lifted at the end of each sheet and never made contact with any surface except that of the paper, despite the fact that observation of most ruler's blankets would indicate otherwise. Washing of moleskin blankets naturally leads to matters of shrinkage and expansion which prevent the blanket from running straight, but a periodic wiping with a rag moistened with an organic solvent usually avoids this danger and cleans off the loose dirt.

When none of these more obvious reasons seems to be the cause of broken lines, the ruler usually resorts to the use of "dopes" in the ink, and it is at this point where the confusion occurs when trying to analyze the source of most ruling difficulties. About 40% of the rulers questioned claimed that they never had to use anything in the ink but dye and water, and it is interesting to note that 80% of these took the cleanliness precautions outlined above. The dope most frequently used was oxgall. Other materials used include the commercial product Rulene, alcohol, acetone, glycerine, and a wide assortment of weak acids and alkalis. Individual rulers have their own

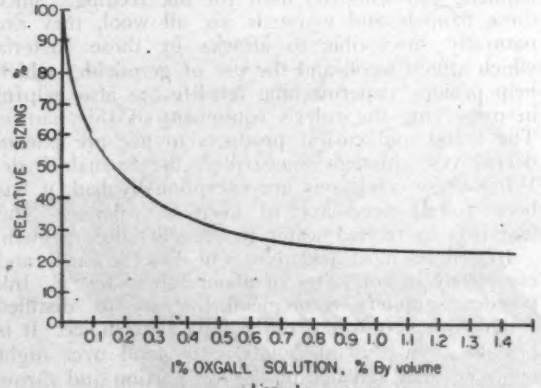

FIG. 1

The Effect of Additional Volume of 1% Oxgall Solution Upon the Ink Penetration Sizing Test.

formulas for the use of these materials, but measurements in general seem to be pretty crude and the amounts used seem to depend upon circumstances of the moment. The general purpose behind the use of these materials seems to hinge upon the ruler's analysis of the difficulty at hand. If he thinks the ink solution is at fault, he uses the dope "to thin out the ink"; if he believes the paper is at fault, he uses it to "cut the sizing."

Figure 1 shows the relative effect of a 1% oxgall solution on the sizing of paper as measured by the ink penetration test. The initial ordinate value of 100% is for the penetration of the clear ruling ink solution (about 0.1 of 1%), and the remaining values, for tests made after adding the different percentages by volume, of oxgall solution, are figured in relation to it. It is obvious from the curve that the result is the same as that experienced with most wetting agents, namely that a little of the material accomplishes a lot and higher amounts of oxgall do not give proportionately quicker penetration. In cases where paper is soft sized to begin with, the use of these materials will naturally cause feathering and show through.

Some isolated cases have been found where rulers use various commercial wetting agents and organic solvents. Naturally in these cases, judicious use is necessary as well as a knowledge of the material itself.

The paper defects which contribute to skipping and broken lines are usually found to be fuzz and lint which picks off the surface and clogs the pens, and grease and waxy spots in the surface sizing. The latter were especially prominent in all-rag sheets surfaced sized with mill-made animal size, in the days when such sizing materials were available. It sometimes happens that press-roll marks, felt and grain marks, and heavy wire and watermarks will break extremely fine pen lines. A hard-sized sheet with a high finish, which the ruler usually refers to as a "slick" finish, will sometimes hamper ink flow and result in lines of uneven width.

Ridging

A difficulty frequently encountered on light weight rag papers is the ridging of the ruled lines. This usually occurs in lines ruled with the grain direction and in extreme cases can throw the sheet into a "washboard" or cause curled edges. Many rulers take this situation for granted and claim that the effect disappears in time during subsequent processes of printing and book-binding.

This problem occurs generally with hard, high density sheets which the papermaker normally associates with slow stock and which he takes for granted as natural and desirable characteristics in this type of paper. Papers containing filler seldom show this tendency, and the same is true of papers which are generally softer in texture than rag sheets. In some cases, humidification of the paper before ruling will reduce this tendency to ridge. It appears in this case that the qualities of hardness, rattle, etc., desired by the ultimate consumer of light weight rag bond papers are contrary to the needs of the ruler in producing a good job, and this is one instance where the ruler must improvise and adapt his technique to the problem.

Many rulers claim to have formulas for overcoming this tendency, and these usually involve the use of some organic solvent or penetrant which will cause the ink to work into the sheet before it can swell

the fibers on one side and cause a hump or curl. Such practices are limited by the amount of show-through and penetration permitted.

Abrasion

During the past few years when many papers have contained fillers to save fiber, rulers have encountered difficulty from the wearing of pens due to abrasion. The main difficulty comes in the cases of double and triple lines where continued wear causes these lines to become further apart. This necessitates a constant watch on doubles and triples so that they can be pinched together frequently before their lines are widely separated. Ordinarily, ruling pens are milled to a uniform thickness for about 0.5 inch up from the tip. This should prevent any variation in individual line width until this point is reached when the pens will have to be replaced. In cases where abrasion is encountered, it is obviously necessary to be sure of uniform and complete contact of all pen tips at the start so that wearing will be uniform and there will be no trouble from pens wearing unevenly and ruling broken and uneven lines. In order to get some relative measurements of this abrasive effect on ruling pens, trials were run on selected papers. A regular "pre-war" unfilled rag content ledger paper, a ledger paper of the same grade and weight but filled with 7% clay of 2 micron size were ruled with the same type of pens and ink solutions. Results after running 5,000 yards of paper of each type indicated a negligible and unmeasurable wear on the regular unfilled ledger sheet while the clay-filled paper wore down the pens at a rate of 0.01 cm. per 1,000 yards of paper. The abrasive effect of the clay filler, while more than that of paper without filler, is not enough to cause serious difficulties, but does necessitate constant watch on double and triple lines and on the pressure on the pen board in order to maintain uniform ruling results.

In general, it is evident that in some cases, the qualities of hardness and extra sizing which are demanded by some users of paper are likely to give the ruler difficulty, and his best hope of meeting this situation is to become acquainted with different types of papers and their qualities and standardize his methods so as to be able to attack each problem in a logical manner. The pen ruling of paper is essentially a simple process, and it should be approached from this viewpoint, as most attempts to make it appear complicated usually result in poor workmanship.

Acknowledgment

The author wishes to acknowledge the data and information supplied by Mr. E. A. Davis of the A. Dredge Ruling Pen Company.

Melting Point of Paraffin Wax*

TAPPI Tentative Standard T630 m-45

This procedure is the standard method of the American Society for Testing Materials *(1)* for determining the melting point of paraffin wax. It has been approved by the American Standards Association as American Standard ASA No. Z11.4-1942 and adopted by the American Petroleum Institute as Standard A.P.I. No. 513-42.

Definition

The A.S.T.M. Paraffin Wax Melting Point is the temperature at which melted paraffin wax, when allowed to cool under definite prescribed conditions, first shows a minimum rate of temperature change.

Note: The so-called "American Melting Point" is an arbitrary figure 3° F. higher.

Apparatus

The apparatus, shown assembled in Fig. 1 (*see* note following), shall consist of:

1. *Wax Container.* A standard test tube, 25 mm. (1 inch) in outside diameter and 100 mm. (4 inches) in length. It may be marked with a filling line 2 inches above the bottom. It is closed with a tightly fitting cork having two openings, one at the center for the melting point thermometer and the other at one side of the center for a stirrer. The opening for the stirrer may be lined with glass or metal tubing to act as a guide for the stirrer.

2. *Air Bath.* A suitable water-tight cylinder, 2 inches in inside diameter and 4½ inches deep provided with a tightly fitting cork having a central opening for holding the test tube firmly in position in the center of the air bath.

3. *Water Bath.* A suitable cylinder, 5⅛ inches in inside diameter and 6 inches deep, provided with a suitable cover and with guides and fasteners necessary to hold the air bath firmly in a vertical central position so that the sides and bottom of the air bath are surrounded by a 1½-inch layer of water. The cover has a slot for introducing a stirrer and an opening for the bath thermometer so that the latter may be suspended in a vertical position ¾ inch from the outside wall of the water bath.

4. *Test Tube Stirrer.* A brass or copper-wire stirrer, ⅛ inch in diameter and about 1 foot long. A circular loop, ½ inch in diameter, is formed at one end in such a manner that the loop lies in a horizontal plane when the rest of the wire is in a vertical position. The stirrer thus formed is passed through the proper opening in the test-tube cork and the upper end may then be bent into a shape convenient for holding.

5. *Melting Point. Thermometer.* An A.S.T.M. Paraffin Wax Melting Point Thermometer, graduated preferably in Fahrenheit degrees, having a range of 100 to 180° F. (38 to 82° C.) and conforming otherwise to A.S.T.M. standard specifications E 1. The scale error at any point shall not exceed 0.2° F. or 0.1° C. for an immersion of 3⅛ inches (79 mm.).

6. *Bath Thermometer.* A thermometer of any suitable type, accurate to 2° F. throughout the required range.

Note: The A.S.T.M. Paraffin Wax Melting Point apparatus may be purchased from most laboratory supply companies.

Procedure

Melt a representative sample of the wax in a suit-

* This method has been approved as a tentative standard by the Nonfibrous Materials Testing Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y. Reprints of this standard may be obtained from the Secretary at 25 cents each.

able container in a water bath the temperature of which is not more than 35° F. above the approximate melting point of the wax sample. Do not use direct heat, such as a flame or hot plate, nor hold the sample in the melted condition any longer than necessary.

Fill the test tube with the melted wax to a height of 2 inches. Insert the test-tube cork, carrying the stirrer and the melting point thermometer with the 3½-inch immersion line at the under surface of the cork, into the test tube for a distance of ½ inch, with the lower end of the thermometer bulb ⅜ inch from the bottom of the test tube. Having the air bath in its proper position in the water bath, fill the latter to within ½ inch of the top with water at a temperature 15 to 20° F. below the approximate melting point of the wax. Insert the test tube containing the melted wax, with wax stirrer and thermometer in place, into the air bath in a central vertical position so that the bottom of the test tube is ½ inch from the bottom of the air bath. Adjust the temperature of the water bath by stirring, if necessary, so that it is lower than the temperature of the sample by not more than 30° F. and not less than 25° F., when the wax sample has cooled to a temperature 10° F. above its approximate melting point.

When the above conditions have been attained, discontinue temperature adjustment and stirring of the water bath but stir the wax continuously during the remainder of the test, moving the stirring loop up and down throughout the entire length of the test tube in a steady motion at the rate of 20 complete cycles per minute. Observe and record the melting point thermometer reading, estimated to 0.1° F., every 15 seconds. The temperature of the wax will fall gradually at first, then become almost constant, and then again fall gradually.

Continue the 15-second recording of the thermometer reading for at least 3 minutes after the temperature again begins to fall after remaining almost constant; then inspect the record of temperature readings and take the average of the first five readings that lie within a range of 0.2° F. Correct this average, if necessary, for any error in the thermometer scale.

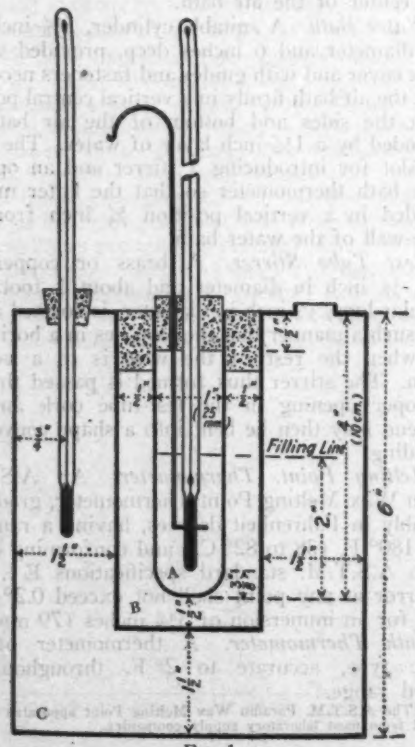

FIG. 1

Apparatus for Determination of Melting Point of Paraffin Wax
A, Container for wax sample. *B*, Air bath. *C*, Water bath.

Report

The corrected average reading shall be reported to 0.1° F. as the A.S.T.M. Melting Point.

Reproducibility

Duplicate determinations on the same samples should not differ by more than 0.2° F.

Literature Cited

1. American Society for Testing Materials, "Standard Method of Test for Melting Point of Paraffin Wax, A.S.T.M. Designation: D 87-42," 1942 Book of Standards, Part III, p. 189.

New TAPPI Members

C. L. Clark, Research metallurgical engineer, Steel and Tube Division, Timken Roller Bearing Company, Canton, Ohio, a 1938 graduate of the University of Michigan.

George J. Clark, chemist, Hollingsworth & Whitney Company, Mobile, Ala., a 1926 graduate of the Pharmacy College.

Robert N. DuPuis, group leader, the Miner Laboratories, 9 South Clinton street, Chicago, Ill., a 1934 graduate of New York University.

James M. Early, United States Army, 340 Roosevelt avenue, Syracuse, N. Y., a 1943 graduate of the New York State College of Forestry.

Francis G. Felske, technical representative, Resinous Products and Chemical Company, 222 West Washington square, Philadelphia, Pa., a 1940 graduate of Amherst College.

Ralph E. Green, engineer, Thwing-Albert Instrument Company, Penn street and Pulaski avenue, Philadelphia, Pa.

Henry Harmsen, chemist, Paterson Parchment Paper Company, Bristol, Pa., a graduate of Pratt Institute.

J. B. Hawley, president, Hawley Products Company, St. Charles, Ill., a 1909 graduate of Dartmouth College.

Edward D. Krebs, Jr., chemical engineer, Union Bag and Paper Corporation, Savannah, Ga., a 1943 graduate of the University of Louisville.

C. Stewart Macnair, package engineer, C. S. Macnair and Associates, 228 North LaSalle street, Chicago, Ill., a 1923 graduate of Knox College.

Raymond C. McQuiston, consulting and development chemist, 36 Pleasant street, Watertown, Mass., a 1921 graduate of Harvard College.

Paper Box Orders Expanded

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 2, 1945—Orders for folding paper boxes in the first two months of this year soared 30 per cent over the December rate, industry spokesmen said, with orders this month maintaining the same volume.

While shipments have been held to record levels, the backlog of unfilled orders has mounted, officials said. The industry has the capacity to meet military and civilian requirements, it was stated, but, due to shortage of paperboard, labor and waste paper, there is idle plant capacity in some sections of the industry.

Paperboard Production Qualities of Cereal Straws*

By Harold C. Koch [1]

Abstract

The experiences of a strawboard mill with the use of various kinds of cereal straws in place of the wheat straw formerly used for the manufacture of strawboard are described.

The straws were found to differ in their properties, which in turn were reflected in their comparative value to the mill. A difference of great importance was that of drainage rate of pulps prepared from them. An evaluation of the straws, on the basis of the mill production attained with pulps prepared from them, lists their value as decreasing in the following order: threshed winter wheat, combined winter wheat, rye, spring wheat, oat, rice, and barley.

For many years, the principal straw used for the manufacture of strawboard was wheat straw cut by binder-harvesters, shocked, threshed, and baled, from the stacks. The development of the combine harvester brought about the use of steadily increasing quantities of combine straw collected from the stubble left in the fields after the grain had been harvested. The straw used was still practically all wheat, however. The disagreement of opinions on the relative merits of threshed straw and combine straw, which started when the latter first appeared, still continues. More recently, a shortage of both of these straws developed and other cereal straws and fibrous plants came into use. Combine harvesting itself reduced the quantity of straw available from a given area and, in addition, the equipment to bale it was not in the fields. The supply was reduced further when the increasing demand for such crops as soyabeans caused the replacement of cereal grains on many farms in certain areas. The shortage of farm labor, equipment, and supplies caused by the war forced mills to use still greater quantities of straws which formerly were not given serious consideration. Many of these had long before been pronounced poor substitutes by older experienced papermakers. Their use resulted in many operating difficulties which were reflected in seriously reduced board production.

Ways and means of alleviating the scarcity of good straws, the development of satisfactory substitutes, and the development of methods to utilize the straws to the best possible advantage are problems of great importance to the industry. The very valuable work which has been done and which is now in progress toward a solution to these problems is indicated by some of the more recent papers on the subject *(1, 2, 3, 4)*.

The various cereal straws differ in physical and in chemical properties, as shown by laboratory analyses and experiments, and they differ in the manner in which they respond to strawboard manufacturing processes, as shown by mill experiences where they have been used as fibrous raw materials. This paper presents the experiences of a strawboard mill while using the straws of threshed winter wheat, combine winter wheat, rye, spring wheat, oat, rice, and barley, and also presents a comparative evaluation of these straws on the basis of mill production. It was found that the straws differed widely in the production attainable with each.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Member TAPPI; Chief Chemist, Auglaize Box Board Co., St. Marys, Ohio and Terre Haute Paper Co., Terre Haute, Ind.

Source and Nature of the Straws

The data forming the basis for this paper were collected over a 2-year period and the quality and condition of each of the straws discussed varied as such quantities of straws would normally be expected to vary, over that period of time. Some of it was received by truck, while most of it was received by rail. Some of it was new when used, some was baled from old stacks, some was baled and stored in the fields, and some had been stored in the mill yard. Their scarcity did not permit very long storage of the straws either in the fields or in the mill yard, however. The comparisons made of each of the straws are, therefore, on straws of average condition and quality.

The threshed winter wheat straw was baled from stacks in Missouri, Illinois, and Indiana. These states and Nebraska supplied the combine wheat straw. Most of the spring wheat came from South Dakota, as did much of the rye, oat, and barley straws. A portion of the oat straw came from more local combine harvested fields. Much of the rice straw came from Arkansas.

The threshed winter wheat straw had the usual whole firm stems, few blades and sheathes and was relatively free of weeds. The combine wheat straw had been exposed to varying degrees of weathering made apparent by the characteristic grey color and it contained considerable weeds and corn stalks. Two varieties of rye straw were received, one of which resembled threshed winter wheat and the other was soft and fine and much inferior to the first. No differentiation was made of these in the data. A hard rye straw alone may have given a higher value than that shown. The spring wheat had finer stems and was often broken and shredded to a fine chaff. Handsful of short fine stem slivers and chaff could often be extracted from the bales without opening them. The oat, barley, and rice straws were progressively softer and had proportionately more blades and sheathes in the increasing order as listed. The combine oat straw often carried many weeds. The rice straw withstood weathering least of all and that which had been stacked was in poor condition.

Evaluation of the Straws in Terms of Production

The mill in which the data were collected was conventional in design and used the conventional process. That is, the globe rotaries were followed by beaters with washer cylinders and these by jordans. The two paper machines had two cylinders each and were

equipped with suction drum return rolls, light suction press rolls followed by two heavy press rolls.

The use of the seven straws alone and in many proportions in mixtures of two or more provided means of comparing them with one another. The paper machines readily demonstrated the differences. When stocks containing percentages of the poorer straws reached the machines, production fell off in proportion to the percentage of each kind present. With adequate pulping and refining capacity behind them, the paper machines alone determined the production qualities of the furnishes. Since the machines also had adequate steam drying capacity, the factors determining production were the stock characteristics affecting the formation in the vats and particularly the water drainage or removal at the suction rolls and the press rolls. The straws varied greatly in the drainage rates of the stocks prepared from them. As the poorer straw stocks were encountered, the vacuum on the machine suction rolls increased and the wet web carried so much water into the press rolls, that crushing would occur until the machines were slowed down to speeds at which they could be handled. Although changes in the straw cooks and changes in the beating, washing, and refining procedures and degrees made to compensate for the differences in characteristics were beneficial, pronounced differences still remained.

Daily stock furnish data and machine speed and production data were collected over a period of 2 years, namely, from January, 1943 to December, 1944. The daily straw furnishes were calculated to percentages of the total of each kind of straw used each day and these were tabulated against the machine speeds and gross production. From these daily figures, 174 were chosen which were not affected by unusual mill conditions, and in which each particular straw amounted to 50% or more of the furnish. Subsequent rearranging of the figures, averaging, and calculating to a comparative percentage gave the evaluations presented in Table I. Threshed winter wheat straw baled from stacks having been found to give the

TABLE I.—COMPARATIVE EVALUATION OF STRAWS IN TERMS OF PAPERBOARD PRODUCTION
(Values stated as percentages with threshed wheat as the standard for comparison)

	Machine Speeds	Gross Production
Threshed winter wheat baled from stacks.....	100	100
Combine winter wheat	95	96
Rye	90	92
Spring wheat	89	89
Oat	83	85
Rice	78	76
Barley	76	74
Paper stock	99	99

best production, it was rated as 100%, while the other straws were rated, in percentages, in proportion to the machine speeds and production in gross tons of board attained with each, e.g., the average speed of the paper machines when using stock prepared from barley straw was 76% of their average speed when using stock from threshed winter wheat, and the mill production with the barley was 74% of that with the threshed wheat stocks. Each kind of straw itself will vary in quality and a number of mill operating variables will also have an effect on production, but the number of figures averaged would tend to make the results representative.

The comparative values are considered to be conservative, since they were based on straw furnishes made up of two or more of the straws and this procedure would tend to lower the value for the threshed wheat straw somewhat and to raise the values for the barley and rice straws. The value given for paper stock consisting of, roughly, 60% old corrugated containers and 40% mixed papers was determined in the same manner.

General Remarks and Observations

The soft straws, the spring wheat, oat, barley, and rice, having fine stems and large percentages of sheathes and blades required less drastic cooking. As the proportions of these in the furnish increased, proportionate reductions in concentrations of chemicals in the cooking liquor as well as in the cooking time were made. This was particularly true with barley and rice straws. The softer straw pulps also required less beating and refining. They require more washing, however, since the beater water with these remained dark and cloudy and their poor water drainage properties, so pronounced on the machines, was very evident in the poorer efficiency of the beater washer cylinders.

Water draining from the harder straw pulps in the beaters became fairly clear after a period of beating and washing, whereas, the water draining from the soft straw pulps continued to carry large quantities of very fine suspended matter.

The barley straw, particularly when new, showed a tendency to give a stock containing a waxy material which coated the machine press rolls and caused "pick-ups." It was necessary to apply kerosene to the press rolls at intervals to keep the deposits of this material in check. The seed hulls of rice straw were found to be very resistant and practically unchanged by the cooking liquors. Many reached the machines unchanged.

Many mill experiments were made in attempts to overcome the inferior qualities of the softer straws, in some measure at least. The cooking formulas were changed from one extreme to the other and different rotary filling and steaming cycles were tried. Changes were made in the customary beating and washing procedure and various different procedures in refining the stocks were used to give different fiber length and freeness characteristics. The alkalinity of the stock was neutralized to a pH near neutral before refining in several experiments to reduce, if possible, the slowness of the stocks. Several experiments were made in which wetting agents were added to stocks at the machines to learn the effects of surface tension and diatomaceous earth filter aids were also investigated. The results of these experiments were all negative; the improvements in the softer straw stock production qualities, if any, were negligible.

The larger percentage of fines and of blades in the original spring wheat, barley, and rice straws and the larger quantities of fine suspended matter liberated from their pulps in the mill beaters appears to have contributed to the conversion losses and to the lower yields which were observed with these straws.

It appeared that the reduced machine speeds helped to minimize differences in finished board quality. However, the quality of board made from the softer straws did not equal that made from the winter wheat and rye straws. The former tended to be more brittle.

Conclusions

On the basis of, and within the limits of one strawboard mill's experience, the cereal straws decrease in comparative value as strawboard fibrous raw materials in the following order: threshed winter wheat, combine winter wheat, rye, spring wheat, oat, rice, and

barley. They differ widely in the machine speeds and production attainable with stocks prepared from each. The data collected over a period of 2 years' operation indicate that the production to be expected with the use of each decreases in the order just given, e.g., the data indicate that the production this mill could expect with the use of barley straw alone is 74% of that to be expected with threshed winter wheat straw. Experience indicates that these results are attributable to differences in drainage rates of the prepared stocks. When the various straws are used in mixtures of two or more, the properties of the stocks prepared from them remain the same and the results are directly related to their values, in proportion to the composition of the mixture.

The cereal straws differ in physical and chemical properties and these properties appear to be reflected not only in the strawboard production to be expected with their use, but also in their requirements for their conversion to strawboard stocks. The differences referred to are those in regard to their cooking chemical and steaming requirements, beating and refining requirements, pulp washing properties, pulp yields, and finished board properties. The straws do not appear to differ as much in these respects, however, as the data indicate that they do in drainage rate and resultant effect on production.

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1. Aronovsky, S. I., Nelson, G. H. and Lathrop, E. C., *Paper Trade J.* 117, No. 25: 38-48 (Dec. 16, 1943)
2. Lathrop, E. C. and Shollenberger, J. H., *Paper Trade J.* 114, No. 20:46-53 (May 14, 1942)
3. Straw for Nine Point. *TAPPI Bulletin* No. 30, April 26, 1944
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Clariflocculation of Mill Waters*

By F. P. Lasseter[1] and B. J. Queern[1]

Abstract

An approach to the complete treatment of the total mill discharge is discussed. A brief review of the fundamentals of flocculation is given. The Dorrco Clariflocculator, which combines the functions of flocculation and clarification in a single tank, is described and some of the advantages of this unit are noted.

The basic principles involved in the treatment of paper machine white water are applicable to water treatment in general for the removal of suspended turbidity and color. Thus, if it is a raw turbid water for clarification and subsequent industrial or municipal use, an industrial waste water for clarification and reuse or discharge to streams, or a paper machine white water for recovery of fiber and possible use again of the water, the primary problem is to coagulate the suspended matter. It is difficult to discuss the treatment of white water without reference to the total mill waste water. As a consequence, this discussion will not be limited to white water alone but will include an approach to the treatment of the total mill discharge with emphasis on the latter. This will include floatable as well as settleable solids, but will assume, and not attempt to deal with, separate domestic sewage treatment.

Strict Legislation Generally Expected

It is generally expected that relatively strict legislation regulating the disposal of waste waters to streams will be enacted during the next several years. This probability lends added significance to a discussion of the total mill waste, as outlined above. The treatment of white water should naturally constitute a very important phase of the subject.

As an introduction to the subject of white water and mill waste water treatment, it is felt that a brief review of fundamentals is in order. This is particularly true since these principles serve as an excellent example of the application of theoretical factors to the practical solution of a very important industrial problem.

Theoretical Considerations

As stated above, the primary objective of any treatment applied to paper mill waste water is to coagulate or flocculate the fine particles of suspended turbidity and color into small clumps so that a crystal clear water is observed between these clumps. Separation of the latter from the clear suspending medium is a secondary phenomenon and takes place as a consequence of, and according to, the laws of settling applicable under the conditions obtaining after flocculation is complete. Suitable basins must, of course, be provided for the continuous separation of the phases and for removal of the sludge resulting. The rate and excellence of flocculation are controlled by two factors, the probability of collision and the probability of adhesion. The objective of chemical dosing for any system is to influence the probability of adhesion. The aim here is to add chemicals which serve to adjust the pH to an optimum for coagulation and at the same time provide enveloping films which serve as bonds holding the clumps intact after formation. Coagulation can be promoted by charge neutralization only by adjusting the pH of the system to the isoelectric point of the suspended particles. Most industrial applications of flocculation, however, take advantage of the enveloping film effect by using aluminum or iron salts as coagulating reagents. The more recent developments in flocculation employing activated silica most probably take advantage of the effects of an enveloping film technique. Special starches and glues sometimes employed for coagulation behave in the same way.

Once the waste water system is so dosed chemically that the probability of adhesion is satisfactorily adjusted the probability of collision is the controlling factor influencing the rate of coagulation. In most paper mill white waters the particles are sufficiently close together to promote rapid flocculation after suitable coagulants are added. A change or two in direction of flow will permit enough shear to result in complete flocculation in a relatively short time. Flotation type savealls are dependent on this for satisfactory performance. In many systems, however, the particles are at a relatively great distance apart and good flocculation without further treatment will not result. When such a system is subjected to con-

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] The Dorr Co., New York, N. Y.

trolled agitation which will increase the rate of shear so that the individual particles are caused to collide, the rate and excellence of coagulation are increased enormously.

Coagulation theories have been the subject of research by hundreds of investigators for many years, and a very voluminous literature exists dealing with the results of these studies. No attempt is made here to cite any of this material as a basis for the above brief outline of fundamentals. It should be stated, however, that justification for this treatment is found both in the theory and in the practice of water treatment for color and turbidity removal.

Equipment Studies

About 1929, The Dorr Company initiated a research program having as its primary objective a study of the effect of mechanical agitation under controlled conditions on the flocculation of suspended particles too small to settle individually at an economic rate. Factors such as size, character, and uniformity of floc and their influence on separation phenomena were investigated, and after fifteen years still constitute a fruitful subject for study. The Dorrco Flocculator and Clarifier used separately for carrying out two essential steps in water treatment resulted from these studies.

Interest in separation processes applicable to every type of separation phenomena led to a study of flotation types and the promotion of the vacuum flotation saveall for white water treatment and recovery. Borrowing from the knowledge of inorganic minerals flotation practice, the use of certain saponified substances was initiated in white water treatment by vacuum flotation. This improved results particularly for the more difficult waters by increasing the rate and excellence of flocculation, and at the same time supplying a reagent which would aid in floating the coagulated suspended solids. The flotation type saveall, because of short contact time, requires almost instantaneous flocculation for effective separation. In some white waters this can be attained only at the expense of excessive reagent additions. There are, of course, cases where even the latter is not sufficiently effective and much of the filler, as well as some fiber, is lost.

The treatment of white water does not take care of the total mill waste water problem although it does constitute a large part of the latter. For this reason, the flotation type saveall has been considered for the treatment of the total mill waste water. It is, however, difficult if not impossible to float some of the suspended solids found in the latter. Flocculation followed by sedimentation is the more reasonable approach to the solution of this problem and a self-contained unit providing for both steps should offer many advantages over separate machines for each operation. The Dorrco Clariflocculator was developed to so function. Its application to paper mill waste water treatment for flocculation and clarification is a logical development. It is designed to remove floatable as well as settleable suspended solids.

Operating Principles

A brief description of the general arrangement and design features may be in order.

The equipment as shown in Fig. 1 combines flocculation and clarification in separate compartments in a single circular tank.

The flocculating compartment, which shall be referred to as the inner zone, is concentric with the clarification compartment or outer zone; or in other words, the zone of flocculation is suspended centrally within the clarifier.

The flocculating mechanism consists of a rotating paddle made up of a series of V-shaped vertical blades extending up from two horizontal arms supported from a vertical outer drum. Intermeshing with these rotating blades are four sets of downwardly extending stationary V-blades that are supported from beams above the liquid surface. Two substantially horizontal flat blades set at an angle and attached to the lower end of the rotating paddle serve to prevent segregation of the solids on the floor of the inner zone.

The clarifier or sludge collecting mechanism is supported from an inner drum which also acts as a feed

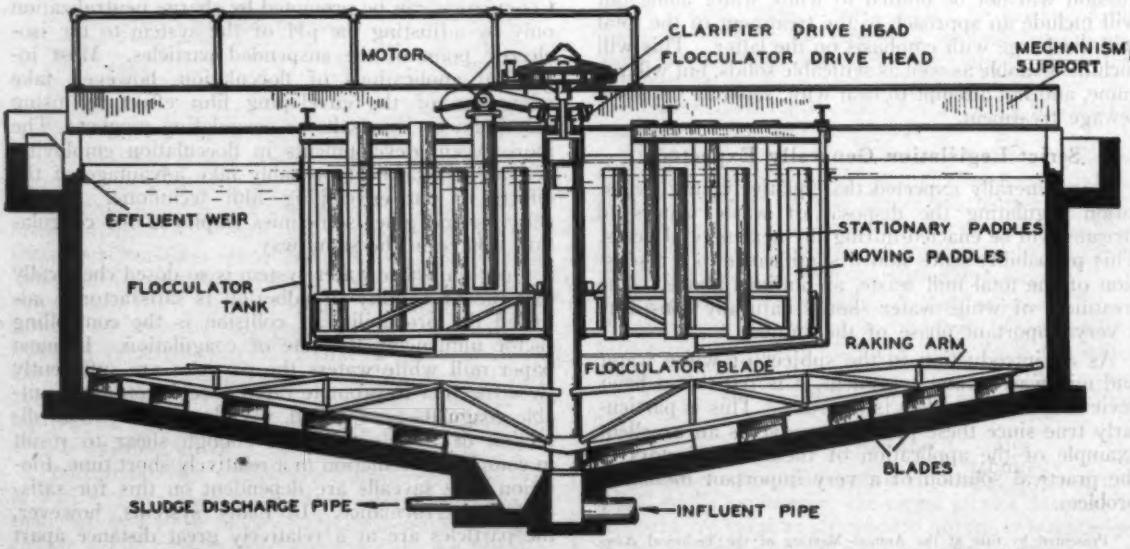

Fig. 1
Sectional Elevation

pipe. Conventional type sludge raking blades are used. When required, a rotating skimmer is used in connection with the clarifier mechanism. Both the flocculator and the clarifier mechanisms are rotated at constant but differential speeds through their vertical support drums by a special type of double drive head.

In the standard design, feed is introduced into the inner rotating drum through a siphon feed pipe. It enters the inner zone at the center at the liquid surface through openings in both the inner and outer drums. It then passes to the outer zone through a central opening in the floor of the flocculator tank. The clarifier effluent is discharged over a peripheral weir in the usual manner.

In special cases the flocculator tank may be fed through an overhead feed pipe or through a pipe extending through the tank wall near the liquid surface.

This equipment is constructed in standard sizes from 30 to 100 feet in diameter with the inner zones ranging from 16 to 50 feet in diameter; the volume of the inner zone being about 25% of the total.

The flocculating unit has been so designed that a maximum of collisions between the newly formed flocs and the incoming liquid is obtained. This is accomplished by the moving and stationery V-shaped blades which are so arranged as to give a maximum to and fro movement in horizontal planes, while downward vertical movement and attendant short-circuiting is minimized. The horizontal movement is not sufficiently rapid to cause floc break-up.

As a result of the rapid flocculation of the raw solids into heavy, dense agglomerations with a minimum of small flocs, the settling qualities of the solids have been greatly improved.

The well flocculated solids then pass quietly into the outer zone through an opening in the floor of the inner zone, which opening is so proportioned as to reduce to a practical minimum the degree of short-circuiting through the flocculator compartment and to prevent the relatively rapid movement in this zone from being transmitted to the outer zone.

Although the diameter of the flocculating compartment is about half of the overall diameter, the effective capacity in the unit for clarification and sludge concentration is practically equivalent to that of a separate clarifier of the same diameter.

Salient Features

Among the salient features of the Clariflocculator for complete treatment of trade wastes are:

1. The unit is compact, with a single drive unit for both the flocculation and clarification mechanisms.

2. Because of relatively slow speeds and absence of submerged bearings, maintenance is low.

3. Heavy solids, such as sand, grit, etc., which settle rapidly, cannot accumulate in the flocculation compartment and interfere with the rotating paddle.

4. The method of introducing the well flocculated solids into the clarification compartment minimizes short-circuiting and results in high overall efficiency and economy.

5. Sudden changes in flow or water characteristics of short duration are absorbed without materially upsetting the operation or results.

Developments in the Physical Testing of Paper During 1943-1944*

By B. W. Scribner[1]

This report covers developments in physical testing of paper and paper products that have come to the author's attention during the period November, 1943 to October, 1944, inclusive. It is one of the reports of developments relating to paper and paper products prepared annually by chairmen of committees of the Technical Association of the Pulp and Paper Industry. Developments in microscopic testing and tests of optical and printing properties are not included as they are dealt with by other committees.

As during the past recent years, much attention was given to testing for resistance to fluids. Much of the development work on such testing was devoted to water vapor and water because of the necessity of protecting war supplies against damage by moisture.

A TAPPI committee, appointed for the purpose, developed an improved method for determining water-vapor permeability under atmospheric conditions simulating those of the tropics, i.e. 100° F and 90% R. H., which was adopted by the Association as a Tentative Standard *(1)*. Results of experimental studies of various methods made for the development of the TAPPI method at the Institute of Paper Chemistry were reported by Sears, Schlagenhauf, Givens, and Yett *(2)*, and results of such studies at the National Bureau of Standards were reported by Weber *(3)*. A revision of the TAPPI method for determination of water-vapor permeability under more normal conditions, i.e. 73° F. and 50% R. H., was issued *(4)*. As a part of a series of its Instrumentation Studies on testing for penetration of water vapor, the Institute of Paper Chemistry described a modification of the cup method for testing creased and uncreased specimens of paper *(5)*, and a procedure for creasing specimens for water-vapor permeability tests *(6)*. The latter was adopted by TAPPI as a suggested method *(7)*. Brabender discussed precautions that must be taken in testing composite sheet materials, such as moistureproof triple-ply glassine, for permeability to water vapor, and described a modified test cell for the purpose consisting in a seamless metal ring having two open faces. He also recommended microcrystalline waxes or specially treated rosins for sealing specimens to cells used for water-vapor permeability testing *(8)*. Graebner discussed the application of humidity equilibria to pack-

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Member TAPPI; Chairman, Paper Testing Committee of TAPPI; Chief of Paper Section, National Bureau of Standards, Washington, D. C.

age engineering with reference to water vapor, and described the apparatus and method for securing the humidity equilibria data, employing the Dunmore hygrometer developed at the National Bureau of Standards *(9)*.

Several investigations had to do with permeation of sheet materials by various other kinds of gases. Kiermeier studied the permeability of packaging materials to aromas relative to foods acquiring undesirable odors or flavors from other foods and materials. He tested packaging materials for permeation to ethyl acetate, trimethylamine, naphthalene, and limonene, which he considered typical of the more important compounds responsible for food odors. The testing procedures and results for each of these materials are given *(10)*. Various forms of apparatus for determination of the permeability of sheet materials to gases in general were described by Cornwell *(11)*, by Russel *(12)*, and by Smith and Kleiber *(13)*. Agahd pointed out errors in the use of Schopper air permeability apparatus caused by leakage of air *(14)*.

A number of publications contain information on permeability to liquids. Liesegang discussed the movement of various solutions in papers, such as ink, dyes, and oil, including the effect of various agents on rate of permeation *(15)*. An article by Noll contains a formula for ink suitable for testing paper for writing quality and permeation by ink *(16)*. Brecht and Liebert made a comprehensive study of the effects of various types of sizing, the degree of sizing, and the composition of papers on the running and penetration of different kinds of inks, and gave quantitative data on the darkening of inks after their application to paper *(17)*. Prior pointed out the necessity of varying the kinds of tests used for testing the degree of sizing of paper, in accordance with the circumstances surrounding the use of the paper *(18)*. A revision of the TAPPI dry-indicator method was published. A procedure formerly contained in the method for applying water to the test specimens by means of a cylinder resting on them has been deleted as it was found to be unreliable for some papers, and the method was improved in other respects *(19)*. Mullen proposed an accelerated dry-indicator water resistance test for asphalted papers made by maintaining the water at 100° F. *(20)*. A modified method for the determination of the grease resistance of papers was proposed by Nilsson and Bergwall. They use a mixture of diethylphthalate and dimethyl glycol in a ratio of 1:3 and dyed with 0.3% Sudan III, as the testing medium *(21)*.

Revised TAPPI methods for wet tensile strength *(22)*, bursting strength *(23)*, flammability *(24)*, and conditioning paper for testing *(25)* were published. A new TAPPI method is for degree of curl and sizing of paper *(26)*. This is based on the curl sizing tester developed by Carson and Worthington, with which the paper is wetted on one side and either the maximum curvature is determined or, for degree of sizing, the time required to reach maximum curvature. Additional Instrumentation studies at the Institute of Paper Chemistry dealt with stretch *(27)* and tearing resistance *(28)*. A critical study was made at the Institute of the determination of stretch with the Amthor, Clark, Schopper, and Scott tensile testing instruments. The study of tearing strength had to do with both the theory and performance of the Elmendorf tearing tester. King and Levitin gave the results of a study of optical heterogeneity of paper; commonly termed in the paper trade "look-through". They described apparatus for measurement of this property and discussed its nature and significance as applied to study of flocculation and sheet formation *(29)*.

Also reflecting the interest in war packaging, considerable study was devoted to shipping containers. Quinn discussed the standardization of the revolving drum *(30)* and the crush *(31)* tests for fiber boxes, pointing out the need for uniform and improved practice in making such tests. He also mentioned the importance of obtaining comparative data on performance of boxes in shipping and in laboratory tests, and stated that such data recently obtained indicate the present laboratory methods of appraising shipping containers to be along the right lines *(32)*. Libby, O'Neil, and Nickerson described tests made at the New York State College of Forestry to find the conditions under which corrosion of food cans in fiber containers is most likely to happen in overseas shipments. The containers filled with cans were subjected to high temperature and humidity in a kiln, after which the containers were tested and examined for failures and the cans were inspected for corrosion *(33)*. Modifications of the buoyancy test for the plies of V-board fiber containers were suggested by Gross *(34)* and by Ulm *(35)*. Lahey described a cycle of drop tests for shipping sacks developed by the Quartermaster Corps, U.S.A., and recommended it for consideration as a standard testing procedure *(36)*.

The American Society for Testing Materials issued a booklet, "Paper and Paperboard—Characteristics, Nomenclature, and Significance". Circular C 445 of the National Bureau of Standards, "Effect of Humidity on Physical Properties of Paper", by Carson, contains data showing the variation with humidity of basic ream weight, strength and stretch. Montigny reviewed literature on testing methods published during the twelve months ending October 1, 1943 *(37)*. Scribner gave his annual reports dealing with developments in the physical testing of paper *(38)* and the activities of the Paper Testing Committee of the Technical Association of the Pulp and Paper Industry *(39)*.

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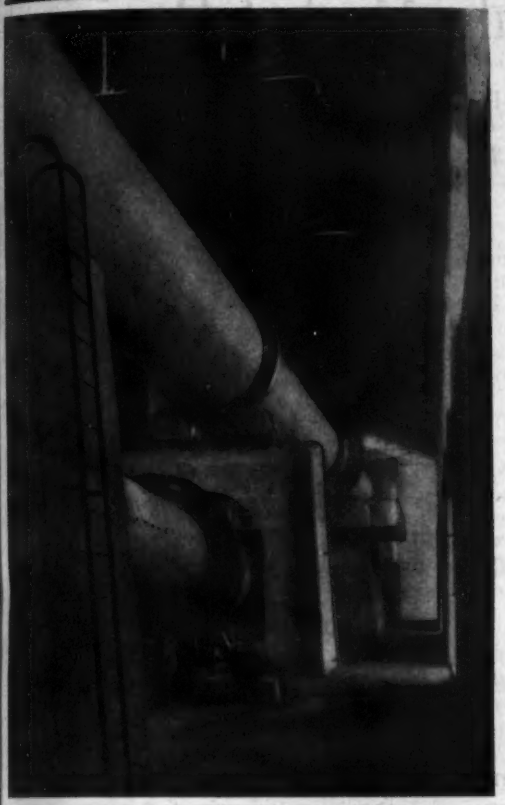

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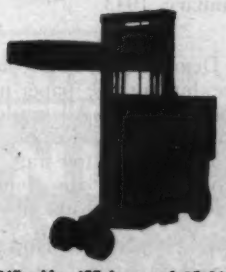
Platform size 24 x 42 x 11" high, low position; 15" high when elevated. Capacity: 2000, 3000, and 4000 pounds.

Capacity 2000 lbs. on forks 30" long. Truck turns from a 5' aisle into an intersecting aisle of 5'.

Weight of 4000 lbs. capacity—3850, without battery. Truck turns from a 5' 4" aisle into an intersecting aisle of 4'.

Platform 24" wide, 53" long and 11" high, low position. Capacity 2000, 3000 and 4000 pounds.

The Wright-Hibbard Telescoping high lift truck is designed to operate in the most congested areas of factories and warehouses. The exceptionally narrow width and short overall length found in other Wright-Hibbard trucks are retained in this model.



Platform 24" wide, 43" long and 9" high, low position. Weight of 4000 lb. capacity—2000 without battery.

New York Paper and Pulp Market Review

Further Curtailment In the Civilian Paper Supply Is Expected— Deep Cut In Wood Pulp For Paper Products Seems Certain — Waste Paper Collections Are Now Lagging Behind Expectations.

Office of the PAPER TRADE JOURNAL,
Wednesday, April 4, 1945.

Further curtailment in the paper supply for many civilian uses below earlier estimates for the second quarter, seems likely at this date. Considerably more wood pulp for nitrating will necessitate a heavy reduction in the pulp supply for the manufacture of paper. It appears probable that somewhat more paper is scheduled for early shipment to foreign countries. The tightening of the home belt referred to by the President, will include a diversified list of products and paper will be a relatively important item among them.

The index of general business activity rose to 143.6, from 142.8 for the previous week, compared with 143.2 for the corresponding week last year. The index of paperboard production was 156.4, compared with 152.6 for the previous week, and with 145.6 for the corresponding week last year.

Paper production for the week ended March 24 was estimated at 92.1%, compared with 88.5% for 1944, with 90.6% for 1943, with 103.4% for 1942, and with 94.5% for the corresponding week in 1941.

Paperboard production for the week ended March 24 was 93.0%, compared with 97.0% for 1944, with 95.0% for 1943, with 101.0% for 1942 and with 84.0% for the corresponding week in 1941.

The Foreign Economic Administrator reports that Lend-Lease shipments of paper last year amounted to 0.80 of our supply and pulp 1.1%.

Newsprint has been increased $3 per ton and the price of roll on contract is now currently quoted at $61 per ton, delivered New York. The same price increase has been granted for other zones.

Wood Pulp

Production of wood pulp in January totaled 866,000 tons, compared with 793,000 tons in December, 1944, and with 812,000 tons in January, 1944, the Department of Commerce reports. This is an increase of 9% over December, and 7% over January, 1944. Consumption of wood pulp gained 7% over December, and 3% over January, 1944. Imports were 4,000 tons lower in January, 1945, than in the same month in 1944, and exports declined 33% in January under December, and 27% under January, 1944. January inventories declined 3% under December, 1944; about 17% below January, 1944, and 60% under January, 1943.

Rags

Demand for new cotton cuttings is active. Mills are buying the paper-making grades freely and in good volume. All grades of new cotton rags are in active demand. Prices are strong at ceiling levels.

The old cotton rag market is active. Mills are reported to be absorbing the roofing grades in good volume. Prices are firm at ceiling levels.

Old Rope and Bagging

Manila rope continues relatively scarce compared with urgent needs. Demand is moderate to active for other fibers at this date. Prices are firm and unchanged.

Trading in scrap bagging is reported fair at this date. Reports indicate the expectancy in the trade of more activity, but the market is sluggish at this date, with more inquiries than sales. Prices continue of a nominal nature.

Old Waste Paper

Mill demand for paper stock is active in a strong and broad market. All grades are in demand. Prices continue strong at ceiling levels.

Collections for January totaled 537,000 tons, compared with 550,000 tons in January, 1944, and with 528,000 tons in January, 1943. This is about 4% above collections for last December.

Twine

Demand is moderate to good for most grades of twine this week. No important change in the supply situation or in prices has been reported during the current week.

Fine and Wrapping Paper Men Meet

A series of N.P.T.A. meetings for fine and wrapping paper merchants has been held throughout the Midwest in the course of the past several weeks.

Various matters of local interest were discussed. Information concerning second quarter allocations and their impact upon the paper merchant, 1944 annual statistics, various other government actions, and suggested Association activities were covered by W. G. Leathers, Assistant Secretary of the National Paper Trade Association.

The meetings were sponsored by the following groups: Chicago Fine Paper Association, March 12, Union League Club, Chicago; Chicago Wrapping Paper Association, March 13, Bismarck Hotel, Chicago; St. Louis Fine & Wrapping Groups, March 14, American Hotel, St. Louis; Central & Middle States Groups of Ohio, March 15, Cincinnati Club, Cincinnati; Wisconsin Fine Paper Association, March 19, Milwaukee Athletic Club, Milwaukee; Wisconsin Wrapping Paper Association, March 20, Schroeder Hotel, Milwaukee; Western Michigan Group of the Central & Middle States Association, March 21, Hotel Rowe, Grand Rapids; Detroit Fine & Wrapping Groups, March 23, Harmonie Club, Detroit.

Paper Mill Shipments Rise

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 4, 1945—The January value of paper mill shipments was 172 compared with 162 for January of last year and 172 for December 1944 taking an average month of 1939 at 100 according to the monthly survey of industry of the Department of Commerce.

January value of paper mill inventories was 129.0 compared with 131.3 in the same month of last year and 124.7 for December 1944, also taking an average 1939 month at 100.

Price & Pierce Ltd.

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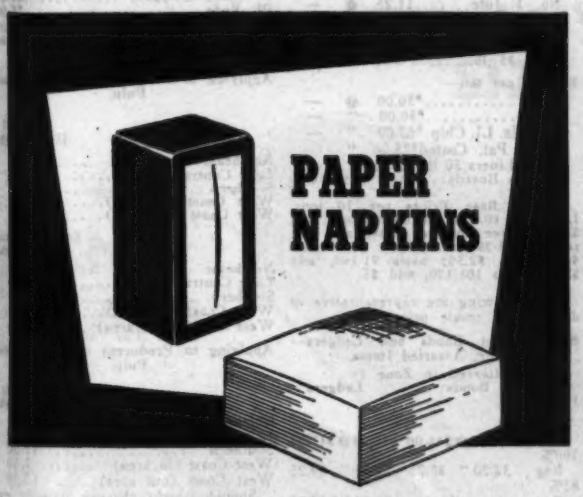

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ANY fold desired. Plain, embossed or printed—our machines will make them. • High speed. An excellent product. Lowest production costs. • Start your post-war production program with the best equipment. Plan for this production now. • We will send complete information — ask us.

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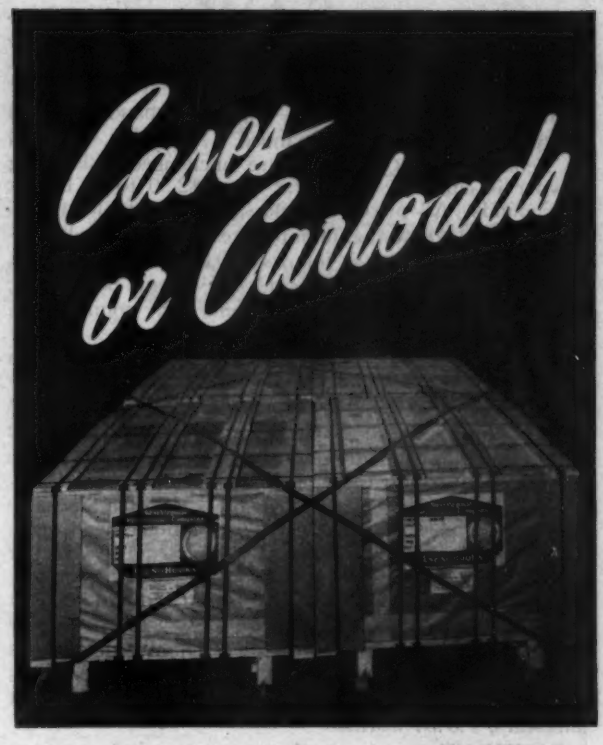

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All sizes of shipments — from the smallest cases or cartons to full cars — can have the advantages of Stanley Steel Strapping and Car Banding materials and methods.

Reducing shipping room man hours is only one advantage of the Stanley System. It gives shipments better protection against the punishing treatment so often met on today's overworked carriers. It also saves valuable shipping space without sacrifice of strength.

The Stanley Steel Strapping System includes tools, reels, and accessories for every purpose — everything you need for fast, dependable application. Write for details. The Stanley Works, Steel Strapping Division, New Britain, Connecticut.

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STEEL STRAPPING AND CAR BANDING SYSTEMS

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 4, 1945.

BLANC FIXE—Prices on blanc fixe continue to conform to prevailing levels. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—All-over demand continues heavy. Plant facilities expanded. Allocation removed on February 27. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand very heavy. Production large, but under demand. Market continues tight. Shipments delayed by traffic congestion. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Military and all essential requirements heavy. Car shortage hampers deliveries. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f:o:b: works.

ROSIN—The rosin market reports prices continue unchanged at ceiling levels. "G" gum rosin is currently quoted at $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $5.75 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda as his reported to absorb current production. Market is tight. Shipments delayed by traffic congestion. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market less firm. Offerings lighter at this date. Freight car shortage delays shipments. Demand continues heavy. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is favorable. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR—Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The curent price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported good. Domestic grades are currently quoted at from $16 to $21 per ton a works.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	*$61.00	@	—
Sheets	69.00	@	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00

Boards, per ton—

News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Lt. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $3.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.90
No. 2 Glossy Coated	12.40	"	14.60
No. 3 Glossy Coated	11.60	"	13.85
No. 4 Glossy Coated	11.15	"	12.70
No. 1 Antique (watermarked)	10.25	"	11.70
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.70
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.20
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.70
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.30
D Grade S. & S. C.	8.50	"	9.70

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite			$86.00
Unbl. Softwood Sulphite			74.00
Bl. Hardwood Sulphite			83.50
Unbl. Hardwood Sulphite			71.50
Bl. Mitscherlich			81.00
Unbl. Mitscherlich	72.00	@	82.00
N. Bleached Sulphate			86.00
S. Bleached Sulphate			79.00
N. Semi-Bleached Sulphate			82.00
S. Semi Bleached Sulphate			75.00
N. Unbl. Sulphate			73.00
S. Unbl. Sulphate			63.00
Bl. Soda			76.00
Unbl. Soda			72.00
Groundwood			50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$3.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

West Virginia Pulp and Paper Company

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ENGLISH FINISH SUPERCALENDERED
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Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

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BLEACHED SULPHITE AND SODA PULP
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MILLS:

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WAR is Our Preoccupation

(as long as it lasts)

but

Paper Mill Machinery is Our Business

*

TABLE ROLLS PRESS ROLLS
MACHINE PARTS
FROM BEATERS TO CALENDERS

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★ ANY SIZE

★ ANY SHAPE

The IDEAL Material for Tanks and Chests

★ MAXIMUM STORAGE ★ PROPER AGITATION ★

Kalamazoo Vitrified Glazed TILE

PERFECT CLEANLINESS

Chests available now with complete Erection Service

KALAMAZOO TANK & SILO CO. Kalamazoo Michigan

Old Rags

White, No. 1—			
Repacked	*1.80	@	—
Miscellaneous	*1.90	@	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	@	—
No. 2	*1.45	@	—
No. 3 (bagging)	*1.35	@	—
No. 4	*1.35	@	—
No. 5A	*1.35	@	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.35	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	@	—
Checks and Blues	2.00	@	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	@	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	@	4.85
Manila Rope—			
Foreign	—	@	—
Domestic	*5.75	"	—
Jute Threads	5.50	@	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	@	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	@	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	@	—
Mixed Groundwood Colored Shavings	.90	@	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	@	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	@	—
New 100% Kraft Corrugated Cuttings	2.25	@	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	@	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	@	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	@	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	@	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	@	—
Paper Makers	.17	@	—
Tube Rope	.19	"	—
Wall Paper	.20½	@	—
Wrapping	.23	@	—
Soft Fiber Rope	.19	@	—
Cotton	.25	@	—

(Hard Fiber)

Medium Java	.18	@	—
Mex. Sisal	.16	@	—
Manila	—	@	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¼
Light Silesias	.05¼
Black Silesias, soft	.03¼
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¼
New Black Soft	.03½
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	1.80	@	—
Miscellaneous No. 1	1.30	"	—
Miscellaneous No. 2	2.65	@	—
White No. 2—Repacked	2.90	@	—
Thirds and Blues—Miscellaneous	1.80	@	—
Repacked	2.20	"	—
Black Stockings—(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	@	—
Domestic No. 2	1.45	@	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	@	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.80	@	4.50
No. 1 Clean bright—Sisal Strings			.84
No. 2 Clean bright—Sisal Strings			.83
Sisal Jute	.03½	"	.03¾
Scrap—			
No. 1	3.25	@	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	@	4.25

No. 1 New Light Burlap	3.90	@	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	@	—
Soft White Shavings, one cut	2.50	@	—
White Blank News	1.65	@	—
Soft White Shavings, Misc.	2.15	@	—
No. 1 Fly Leaf Shavings	1.67½	@	—
No. 2 Fly Leaf Shavings	1.12½	@	—
No. 1 Groundwood Fly Leaf Shavings	1.25	@	—
No. 2 Groundwood Fly Leaf Shavings	.90	@	—
Mixed Colored Shavings	.75	@	—
New Manila Envelope Cuts, one cut	2.87½	@	—
Hard White Envelope Cuts, one cut	3.37½	@	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	@	—
Mixed Kraft Env. & Bag Cuttings	2.75	@	—
Kraft Envelope Cuttings	3.25	@	—
No. 1 Heavy Books & Magazines	1.92½	@	—
New Manila Envelope Cuts, one cut	2.87½	@	—
New Manila Envelope Cuttings	2.65	@	—
White and Colored Tabulating Cards	2.25	@	—
Ground Wood Tabulating Cards	1.35	@	—
White Blank News	1.65	@	—
No. 1 Assorted Old Kraft	1.75	@	—
No. 1 Mixed Paper	.95	@	—
Overissue News	1.10	@	—
Box Board Cuttings	.72½	@	—
New Corrugated Cuttings, Kraft	2.25	@	—
Old 100% Kraft Corrugated Containers	1.75	@	—
Old Corrugated Containers	1.40	@	—
Jute Corrugated Cuttings	1.07½	@	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	@	—
Sisal Rope No. 2	*4.25	@	—
Mixed Rope	—	@	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	@	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	@	—
Soft Jute Rope	5.25	@	—
Jute Car Threads	3.00	@	3.50
Bleachery Burlap	8.50	@	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	@	3.00
South American	—	@	3.25

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	@	—
Soft White Shavings, Misc.	2.15	@	—
No. 1 Fly Leaf Shavings	1.67½	@	—
No. 2 Fly Leaf Shavings	1.12½	@	—
No. 1 Groundwood Fly Leaf Shavings	1.25	@	—
No. 2 Groundwood Fly Leaf Shavings	.90	@	—
Mixed Colored Shavings	.75	@	—
New Manila Envelope Cuts, one cut	2.87½	@	—
Hard White Envelope Cuts, one cut	3.37½	@	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	@	—
Mixed Kraft Env. & Bag Cuttings	2.75	@	—
Kraft Envelope Cuttings	3.25	@	—
No. 1 Heavy Books & Magazines	1.92½	@	—
New Manila Envelope Cuts, one cut	2.87½	@	—
New Manila Envelope Cuttings	2.65	@	—
White and Colored Tabulating Cards	2.25	@	—
Ground Wood Tabulating Cards	1.35	@	—
White Blank News	1.65	@	—
No. 1 Assorted Old Kraft	1.75	@	—
No. 1 Mixed Paper	.95	@	—
Overissue News	1.10	@	—
Box Board Cuttings	.72½	@	—
New Corrugated Cuttings, Kraft	2.25	@	—
Old 100% Kraft Corrugated Containers	1.75	@	—
Old Corrugated Containers	1.40	@	—
Jute Corrugated Cuttings	1.07½	@	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	@	—
Sisal Rope No. 2	*4.25	@	—
Mixed Rope	—	@	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	@	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	@	—
Soft Jute Rope	5.25	@	—
Jute Car Threads	3.00	@	3.50
Bleachery Burlap	8.50	@	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	@	3.00
South American	—	@	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	@	—
Aust. Wool Pouches	3.25	@	3.50
New Zealand Wool Pouches	—	@	3.50
New Burlap Cuttings	4.75	@	5.00
Heavy Baling Bagging	4.00	@	4.25
Paper Mill Bagging	2.50	@	2.60
No. 2 Roofing Bagging	1.35	@	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	@	.04½
New White No 1.	.06¾	@	.07
New Light Flannelettes	.05½	@	.06
Canton Flannels, Bleached	.06	@	.06½
Underwear Cutters, Bleached	.06¼	@	.06½
Underwear Cutters, Unbleached	.05¼	@	.06
Silesias No. 1	.06	@	.06½
New Black Silesias	.03	@	.03½
Red Cotton Cuttings	.03½	@	.04
Soft Unbleached	.06½	@	.06¾
Blue Cheviots	.05½	@	.06
Fancy	.02½	@	.03
Washable	.02¾	@	.03
Khaki Cuttings	.02½	@	.03
O. D. Khaki	.03½	@	.03¾
Corduroy	.03½	@	.03¾
New Canvas	.06¼	@	.06½
B. V. D. Cuttings	.06½	@	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	1.80	@	—
Miscellaneous	1.30	@	—
White No. 2— Miscellaneous	2.65	@	—
Twos and Blues, Repacked	2.20	@	—
Old Blue Overalls	2.25	@	2.60
Thirds and Blues, Repacked	2.20	@	—
Miscellaneous	1.80	@	—
Black Stockings	3.50	@	4.00
Roofing Stock—			
No. 1	1.55	@	—
No. 2	1.45	@	—
No. 3	1.35	@	—
No. 4	1.35	@	—
No. 5, Quality A	1.35	@	—
Quality B	1.20	@	—
Quality C	.95	@	—
Old Manila Rope	5.75	@	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Soft White Shavings	2.50	@	—
Misc.	2.15	@	—
No. 1 White Ledger	2.30	@	—
No. 2 Ledger, colored	2.00	@	—
No. 1 Heavy Books & Magazines	1.92½	@	—
Overissue Magazines	1.67½	@	—
New Manila Envelope Cuttings	2.65	@	—
No. 1 Assorted Old Kraft	1.75	@	—
No. 1 Mixed Paper	.95	@	—
Box Board Cuttings	.72½	@	—
Kraft Corrugated Cuttings	2.25	@	—
Old Corrugated Containers	1.40	@	—
Overissue News	1.00	@	—
No. 1 News	1.00	@	—
No. 1 White Ledger	2.30	@	—
No. 1 Heavy Books & Magazines	1.92½	@	—
White Blank News	1.65	@	—
Mixed Kraft Env. & Bag Cuttings	2.75	@	—
No. 1 Assorted Old Kraft	1.75	@	—
Overissue News	1.10	@	—
No. 1 News	1.00	@	—
No. 1 Mixed Paper	.95	@	—
No. 1 Roofing Rags	1.35	@	—
No. 1 Roofing Bags	1.45	@	—

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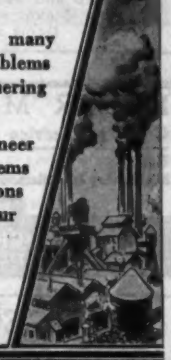

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SALARIED POSITIONS — This advertising service of 35 years' recognized standing negotiates for high salaried supervisory, technical and executive positions. Procedure will be individualized to your personal requirements and will not conflict with Manpower Commission. Retaining fee protected by refund provision. Identity covered and present position protected. Send for details. R. W. BIXBY, INC., 117 Delward Bldg., Buffalo, 2, N. Y. tf

SALESMAN for large folding carton and specialty manufacturer. Unusual opportunities. Give full qualifications, age and draft status. Replies held in strictest confidence. EMPIRE BOX CORPORATION, Garfield, N. J. A-19

PLANT MANAGER—Established Philadelphia Plant making high quality bags (self-opening, squares, flats, sacks, specialties) want plant manager experienced in handling production and personnel in union shop. Give full qualifications. Replies held in strictest confidence. Address Box 45-196 care Paper Trade Journal. A-19

WANTED — Master Mechanic and Millwright with paper mill experience. Reply to Mr. T. J. Russell, Mill Manager, Sangamon Paper Mills, Eaton, Indiana. A-12

WANTED — Machine Tenders, Back Tenders and Third Hands for cylinder machine. Reply to Mr. T. J. Russell, Mill Manager, Sangamon Paper Mills, Eaton, Indiana. A-12

SUPERINTENDENT wanted for Furniture Bogus Mill near Albany, N. Y. Also Machine Tenders, Back Tenders, Millwright. State all when answering. Address Box 45-204 care Paper Trade Journal. A-26

CHIEF ENGINEER — Master Mechanic. An exceptional opportunity is offered by paperboard manufacturer making folding grades. Expansion program in immediate future. Write in detail giving educational background, previous connections and salary expected. Address Box 45-205 care Paper Trade Journal. A-19

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

CHEMIST—for eastern paperboard mill and folding carton fabrication plant. Experience or training in both branches of field required. Give complete information including personal status and salary expected. Address Box 45-213 care Paper Trade Journal. A-26

WANTED—Superintendent — cylinder machine. Experienced on dry saturating felt. Give references, age, married or single, where employed. Confidential. Pacific Coast. Address Box 45-212 care Paper Trade Journal. A-26

SITUATIONS WANTED

ARE YOU PUTTING YOUR POST-WAR PLANNING ON A SOLID FOUNDATION?

Export Sales Executive and Travelling Representative, twenty years specialized desk and field work in the foreign paper trade, experienced in the sale and distribution of **FINE** and **COARSE** paper lines respective specialties is available to mill looking forward beyond today's task of production who in giving consideration to post-war opportunities wishes to put plan on a solid foundation—not on glittering generalities and guess work—for building up a profitable and permanent export trade. Advertiser have travelled extensively throughout Latin American countries and the Orient, having excellent followings among paper importers, publishers, graphic art trade, industries and is well posted of peculiarities and requirements of each market. At present associated with one of leading paper export companies. College graduate, commanding the Spanish, French and Portuguese languages. Spanish ancestry and U. S. citizen. Compensation desired on straight commission basis or one commensurated with activities. Shall consider proposals for travelling through a territory or as representative in specific market. Since the time for necessary preparatory work may be shorter than you may think it will be to your advantage to take action now by addressing BOX 45-195 care Paper Trade Journal. A-5

FINISHING AND SHIPPING SUPT.—College man will consider change. Is energetic and a good executive. Will guarantee results as to output, reduction of waste, best use of manpower and operational costs. Prefers northern location. Address Box 45-130 care Paper Trade Journal. A-5

SUPERINTENDENT—25 years experience in Book, Bond and Specialty Mills, using Kraft Sulphite, Rag Stock, De-inked stock, Soda Pulp, etc. 40 years of age. Conscientious, aggressive and capable of taking complete charge. Address Box 45-148 care Paper Trade Journal. A-12

SUPERINTENDENT—20 years experience in paper bag conversion of grocery, sacks and aniline or oil ink printed specialty bags. Capable of handling all bag shop problems. Thorough experience in supervision of help, maintenance and repairing of machines. Address Box 45-155 care Paper Trade Journal. A-5

FOURDRINIER EXECUTIVE available. Good educational background. Many years practical machine experience. Familiar with latest de-inking developments. A producer, who understands his business. Address Box 45-181 care Paper Trade Jonrnal. A-5

PROJECT ENGINEER—MIT graduate, experienced construction and maintenance, kraft, sulphite or groundwood. Capable assuming full charge project design and construction. Draft exempt. Address Box 45-187 care Paper Trade Journal. A-12

ENGINEER—M. E. training. Background of 20 years in the paper and pulp industry in engineering and managing capacity. Qualified and experienced in supervising power, construction, maintenance and operation. Kraft or sulphite. Available on short notice. Address Box 45-198 care Paper Trade Journal. A-19

PLANT ENGINEER OR CHIEF ENGINEER AND MASTER MECHANIC—20 years experience in construction and maintenance of industrial plants, steam plants, chemical plants, pulp and paper mills, saw-mills. Experienced in all machine shop work, good draftsman, good organizer and can get results. College education. Best of references. Prefer western or southern location. Address Box 45-197 care Paper Trade Journal. A-5

PRODUCTION MAN—Thoroughly experienced in production and supervision all varieties fine cardboards. Successful record personnel relations. Address Box 45-4 care Paper Trade Journal. A-26

SITUATIONS WANTED

WANTED POSITION as Trouble Shooter or Production Manager. One mill or a group of mills. Cylinder or fourdrinier machines. Can go anywhere. Satisfaction guaranteed or no pay. Would consider Superintendent with chance for advancement. Address Box 45-201 care Paper Trade Journal. A-19

A FOLDING CARTON PRODUCTION MAN —Methods Engineer, solicits correspondence from salesman with established clientele, interested in starting a new carton business. Present position, production executive with a large combined operator in the middle west. Very successful in making money for others. Interested in profit participation. Replies confidential. Address Box 45-202 care Paper Trade Journal. A-1

DIRECTOR OF PURCHASES — Thoroughly experienced in contracting, selection of materials, expediting, disposal of surplus, initiating use of new materials, inventory control, material control, acceptance, subcontracting, traffic and inspection of materials needed to operate a pulp and paper mill. Conscientious, aggressive and capable. Address Box 45-203 care Paper Trade Journal. A-19

INDUSTRIAL RELATIONS DIRECTOR — Now employed. Experienced all phases labor relations and personnel management, job evaluation, W. L. B., union negotiations, wage stabilization, etc. Age 34, B.A. and L.L.B. degrees. References. Address Box 45-207 care Paper Trade Journal. A-19

FOR SALE

FOR SALE

Two new Calender rolls 10 x 119

One 158" ten roll Calender stack

One 143"—7 roll Calender stack

One 130—9" roll Calender stack

One 120—11" roll Calender stack

Two 108"—7 roll Calender stack

One 104"—11 roll Calender stack

One 88"—9 roll Calender stack

One 45"—3 roll Calender stack

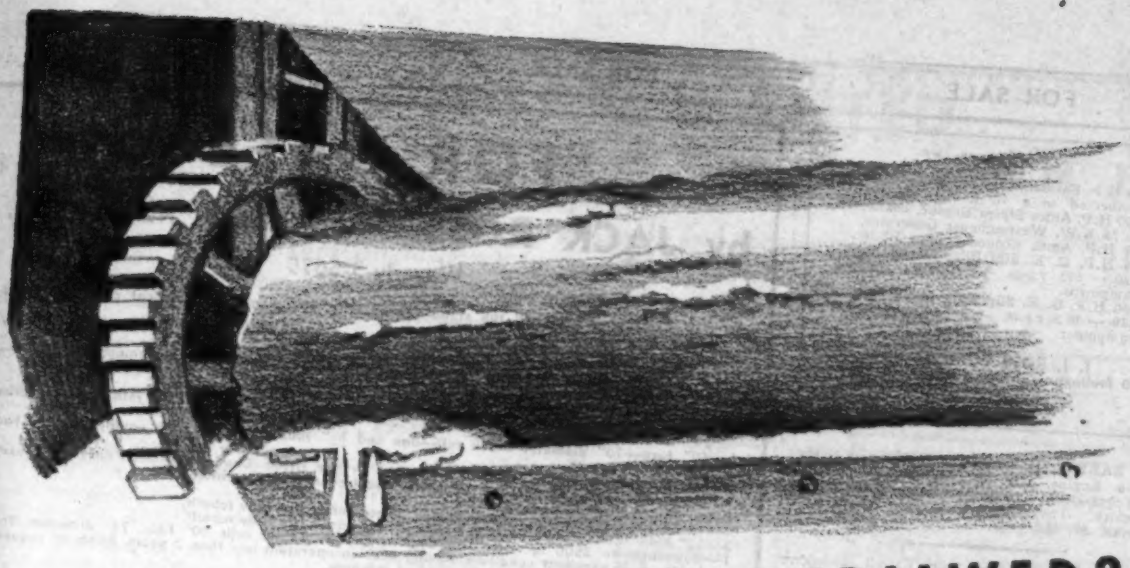
Address Box No. 45-208 care Paper Trade Journal.

A-26

FOR SALE—1 - Spiral Heat Exchanger (Condenser), 140 Sq. Ft., built of mild steel, brand new, never used. Address Box 45-190 care Paper Trade Journal. A-5

FOR SALE—50" Sheridan New Model Cutter in good working order. Address Box 45-199 care Paper Trade Journal. A-5

FOR SALE — 1927-1944 Technical Association Papers, 18 Volumes. 1931-1943 TAPPI Bibliographies (1935 not included) 12 Volumes. Excellent condition. . . . Make offer. Address Box 45-186 care Paper Trade Journal. A-19



IS YOUR DRYER WHOPPERJAWED?

What are we driving at? Just this. Bored dryers are weakened dryers. Weakened dryers tend to get out of round . . . sag in one spot . . . bulge in another. Result—face out of true and doctors in contact only part of the time and over certain areas of the face only. You can't dry paper uniformly that way.

Black-Clawson seamless dryers, being unbored, have less of their wall strength removed. They retain their glass-like, rust-resisting interior film and lose little or no wall strength, over the years, due to erosion.

That's why, after 20 years' service, a section of 77 seamless dryers (36"x78") all checked O.K. for balance and were still straight across their faces. No 20-year-old section of bored dryers will ever be able to match that record.

There is still more to be said in favor of Black-Clawson seamless dryers. Drop us a line. Give us the opportunity to say it. But first, go out and see how many of your present dryers are "Whopperjawed."

SHARTLE Dilts

BLACK-CLAWSON CO. Hamilton, Ohio

DIVISIONS:
SHARTLE BROS., MIDDLETOWN, OHIO
DILTS MACHINE WORKS, FULTON, N. Y.

FOR SALE

FOR SALE

1—60 H.P. Fairbanks Morse Deisel Engine, connected to a 40 K.V.A. Generator.
1—100 H.P. Ames Steam Engine, connected to 75 K.W. Westinghouse Generator.
1—50 H.P. Ames Economy Type Boiler.
1—75 H.P. G. E. Slip Ring Motor—3/60/220 — 695 r.p.m. — including starting equipment.
1—150 H.P. G. E. Slip Ring Motor—3/60/220 — 875 r.p.m. — including starting equipment.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Bigelow 3-3720
A-5

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore, 30, Md. TF

FOR SALE—1—Ten roll 158" Farrell calender, bottom roll 28" dia., two 18" dia., one 14" dia. and six 13" rolls ground and in crates. FRANK H. DAVIS COMPANY, 175 Richdale Ave., Cambridge, 40, Mass. A-5

FOR SALE — Complete Paper Tube Plant, 2 Langston Spiral Winders, 1 heavy duty winder for Paper Cores; Tube recutters and tools, mandrels, etc. Paperboard slitter, Paper Cap, Punch Press and Dies. Reasonable for quick sale. THEO. ADAMS, 111 West Washington Street, Chicago, 2, Ill. A-19

FOR SALE — 2 Holyoke 7-roll Calendering Machines; Large quantity of steel, brass and copper rollers of various diameters and lengths. What are your requirements? Address Box 45-200 care Paper Trade Journal. A-5

FOR SALE — Two-Ames 15½" x 16" Twin Engines, horizontal variable speed 50 to 225 RPM, in very good condition. Frank H. Davis Co., 175 Richdale Ave., Cambridge, 40, Mass. A-5

FOR SALE

45" Standard Beck Rotary Sheet Cutter.
62" Moore & White Rotary Sheet Cutter.
1—Noble & Wood Mammoth Jordan with new shell and plug fillings.
1—Standard Horne Jordan with extra shell and plug fillings.
1—Lewis-Shepard Master Stacker with 10' lift. Platform 24" x 36".
3—Double-drum Warren Winders, 82", 103" and 104" wide.
1—Double-drum Bagley & Sewall Winder, 148" wide.
1—F. X. Hooper Single Color Printing and Slotting Machine, sizes 36" x 51". A-1 condition.
3—Deloit Triplex Plunger Stock Pumps, sizes 8" x 12", 9" x 12" and 10" x 10".

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y.
TF

FOR SALE

FOR SALE

by JACK ROSS 17 Porter Avenue, Newark 8, N. J.

Waverly 3-5675

1—#10 Camachine with mill roll stand rewind with 36" diameter. Excellent condition. Used four years.
200—SKF Ball Bearings #6220—new, in original boxes—immediate shipment—no priority needed.
1—A O Wood Saveall—cylinder—60" face by 48" diameter—ball bearing equipped—rebuilt—specifications on request.
1—No. 1 Voith Pulper—capacity 20 tons per day—requires 20 h..p
1—42" Liner and combing machine. Fourteen 6" diameter steam heated rolls and one drier 24" diameter.
1—60" face—16" diameter couch roll—one and ½" rubber—ball bearing equipped—used two months.
3—Improved Paper Machy. Corp. #2 Knotters Bronze fitted. Good condition. Prints on request.
1—#2 Miami Jordans ⅝" bronze fillings for direct connection to motor.
1—65 ton Vertical Lime Kiln.
4—14" x 20" Connersville Vacuum Pumps. These pumps are fully rebuilt.
3—12" x 48" Connersville Vacuum Pumps. These pumps are fully rebuilt.
1—Downingtown 2500 lb. Iron Tub Cyclone Beater. Beater rolls 60" face, 72" diameter. This beater is in excellent condition, having been in operation less than 2 years. Prints on request.
1—44" Waldron drum reeling and rewinding machine.

A-5

FOR SALE

1—Complete 98" Fourdrinier Paper Machine with 26 Dryers, 48" diameter x 96" face, including auxiliary equipment. Additional details on request.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Telephone Bigelow 3-3720

FOR SALE

5 Four-pocket Sandy-Hill pulp grinders each with 1000 H.P., 2300 volt motor, 60" diameter x 27" Carborundum stone, lathe, and temperature control.

1 Four-pocket Carthage Machine Company pulp grinder with 1000 H.P., 2300 volt synchronous motor, anti-friction bearings, lathes, and temperature control.

Priced to Move Quick.

SHARTLE BROTHERS MACHINE CO.
Middletown, Ohio
A-5

PAPER MILL EQUIPMENT FOR SALE

50" Clark Sheeter.
48" Langston Slitter.
110" Hamblet Sheeter with 3 slitters and 4-roll backstand.
45" White Automatic Power Cutter.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
83" Oswego Mill Type Cutter.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18, N. Y.
TF

FOR SALE

New and guaranteed used steel pipe, boiler tubing, valves, fittings, wood and steel tanks, steel buildings

105. GREENSPON'S SON PIPE CORP.
NATIONAL STOCK YARDS, Illinois.
B-6

FOR SALE — 50" Seybold Automatic Clamp Cutter, thoroughly rebuilt and fully guaranteed. Address Box 45-209 care Paper Trade Journal. A-5

FOR SALE

1 Yankee Fourdrinier with 10' x 94" face Yankee Dryer

Shartle Bros. Machine Co,

Middletown, Ohio.

A-5

MACHINERY WANTED

By JACK ROSS 17 Porter Avenue, Newark, 8 N. J.

Waverly 3-5675

Cash purchaser of all types of paper, pulp and converting equipment.
From single items to complete plants.
Write, telephone or wire whatever you have for sale.

FOR SALE

FOR SALE

1—#6 Bird Save-all.
1—Shartle Bros. Decker 36" diameter x 60" face.
1—120" Fourdrinier Wet End.
1—68" Drilled Face Suction Press Roll.
1—Packer Type 14 Plate Flat Screen — with Witham Fasteners and scraping device—plates .022 cut.
1—#9 Emerson Jordan for direct connection to a motor, requires use of 400 H.P. motor.
1—Shartle Brothers Duplex 10 x 20 Stock Pump.
1—Moore & White 10 x 12 Triplex Stock Pump.
2—2000 lb. Holyoke Beaters.
1—1200 lb. Stout, Mills & Temple Beater.
1—Jones pulper — direct connected to 60 H.P. motor.
18—Dryers — 36" diameter x 94" face — complete with two deck frames, etc.
1—Buffalo Pump—5500 g. p. m., direct connected to 100 H.P. Motor (50' head).
1—#4 Roots-Connersville Vacuum Pump.

Various sizes of Centrifugal Pumps. Write us regarding your particular requirements.

We are always in the market to purchase your surplus or idle machinery. What have you to offer?

J. J. ROSS COMPANY
250 Frelinghuysen Ave.
Newark 5, N. J.
Bigelow 3-3720 A-5

FOR SALE

1 almost new Turbine Driven Frederick Centrifugal water pump.
8" DSV - 2500 GPM 90' head.
Murray Turbine.

Box Number 45-191 care Paper Trade Journal. A-5

CLASSIFIED ADS BRING RESULTS

WANTED

WANTED

One Beater of 1,000 lb. capacity. Give complete description, specifications and price.

FOR SALE

42 Dryers consisting of 85" and 86" face — 36" diameter, complete with triple deck stands, gears, bearings and piping.

EMPIRE BOX CORPORATION
Garfield, New Jersey
TF

WANTED TO PURCHASE—Bronze jacketed couch roll, 22 inches in diameter, 137 inch minimum, 140 inch maximum face. Fort Howard Paper Company, Green Bay, Wis. A-5

WANTED—Any Item of Paper Tube and Paper Can Machinery, Slitters, Tube Winders, Cutters, etc. etc. We will buy such machinery in any condition. Theo. Adams, 111 W. Washington St., Chicago, 2, Ill. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 44-835 care Paper Trade Journal. tf

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

WANTED — Second hand Cameron Rewinder that will take a roll sixty to seventy inches in width. Address Fort Howard Paper Company, Green Bay, Wis. A-19

WANTED—One or two plunger type stock pumps of small capacity. Cylinders of 3" to 5" diameter and short stroke will do. Duplex or triplex type. Write Box 45-206 care Paper Trade Journal. A-19

WANTED

WANTED

One (1) Laboratory Beater
Waterbury Hydraulic Drive size 5
11—60" Diameter x 92" Face Dryers
18—48" Diameter x 92" Face Dryers
4—36" Diameter x 92" Face Dryers

with gears, frames, felt rolls and cone pulley drives. Address Box 44-708 care Paper Trade Journal. TF

WANTED

CALENDER STOCK—10" INTERMEDIATE ROLL MINIMUM
ALSO
SHEETER—SINGLE OR DOUBLE CUT-OFF BOTH FOR 72" MACHINE

Address Box 44-728 care Paper Trade Journal. TF

WANTED—Folding Paper Box Folding and Gluing Machine, Model FC or Model B International or similar machine of other manufacture. Urgent! Address Box 45-211 care Paper Trade Journal. A-5

CLASSIFIED ADS BRING RESULTS

CLASSIFIED ADS BRING RESULTS

Sandy Hill
IRON & BRASS WORKS
BUILDERS OF SANDY HILL, BERTRAMS AND KAMYR EQUIPMENT
PAPER MACHINERY SPECIALISTS • HUDSON FALLS, N. Y.

WHERE TO BUY

ABRASIVES
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Monsanto Chemical Co.
Norton Co.

ADHESIVES
Arabol Mfg. Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
H. K. Porter Company Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

BAG MACHINES
Thomas W. Hall Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BEARINGS
Black-Clawson Company
Jones, E. D. & Sons Co.
The Manhattan Rubber Mfg. Co.
Montague Machine Works
Rollway Bearing Co.
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
SKF Industries Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Herman Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machinery Corp.

BLEACHING APPARATUS
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company
Valley Iron Works Co.

BOTTOMS
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
Packing Products Co.

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Fort Pitt Steel Casting Co., Div. H. K. Porter Company, Inc.
The Frederick Iron & Steel Co.
Grinnel Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Magnus Metal Corp.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Smith & Winchester Mfg. Co.
Traylor Engineering & Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross J. O. Eng. Co.
Shartle Brothers Machine Co.

CHEMICALS
Aktivin Corporation
Amer. Cyanamid & Chem. Corp.
Ansul Chemical Co.
Calco Chemical Co.
Diamond Alkali o.
Dispersion Process Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
The Neville Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Stauffer Chemical Company
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
W. R. Cliffe
Ferguson, Hardy S.
Hardy, George F.
Johnson & Wierk, Inc.
The Kohler System Company
L. I. M. E.
Merritt-Chapman & Scott Corp.
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Sonoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Mfg. Co.
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.

DIGESTERS
The Bigga Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric & Manufacturing Company

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric & Manufacturing Company

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Fitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Klemp, W. F., Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Robinson, C. P.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
N. P. Bowaher
The Foxboro Company
General Electric
W. & L. B. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.
Westinghouse Electric & Manufacturing Company
Wilkens-Anderson Co.

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plehn Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric & Manufacturing Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
The Norwood Engineering Company
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
Kemp, W. F., Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
The Richardson Economy Plug Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer G.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteaman & Co., Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric & Manufacturing Company

RESINS
American Cyanamid & Chemical Corp.
The Nevills Company
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Pitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
American Cyanamid & Chemical Co.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Sickle Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric & Manufacturing Company.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.

Traylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnell Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric & Manufacturing Company
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric & Manufacturing Company

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co. Inc.
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Hayden Wire Works
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[PUMP TIPS FROM ALLIS-CHALMERS—ONE IN A SERIES]

How to make WEARING RINGS Last Longer . . .

ANY NEW PUMP you buy is guaranteed to deliver its rating in capacity and head. But whether it *retains* its actual capacity depends to a great extent on the condition of its wearing rings. For when rings are worn thin, liquid leaks through the enlarged clearance between impeller and casing — seriously reducing capacity.

One of the major causes of excessive ring wear is misalignment. So serious can it be, that Allis-Chalmers engineers were led to develop, for many applications, the "Electrifugal" pump — in which *both* impeller and motor are mounted on *one* shaft and in *one* frame. This *unit-design* prevents parts in the pump's closely fitted body from getting out of "kilter" . . . helps you get longer life out of wearing rings.

However, regardless of whether you have a unit-design or separately coupled pump and motor, here are a few tips which will help you get longer wear from rings in your pumps . . .

▸ Never allow a pump to run dry — either through lack of proper priming when starting, or through loss of suction when operating. Remember . . . water is a *lubricant* between rings and casing.

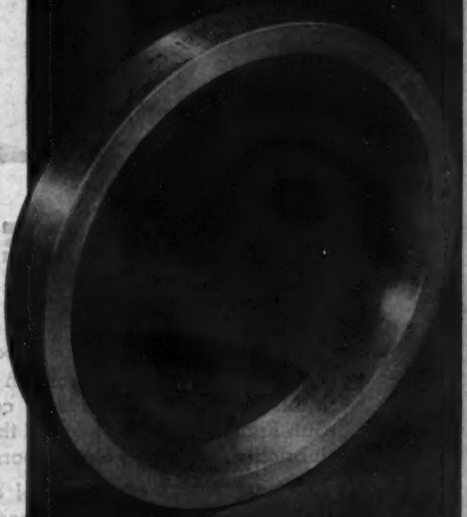
▸ Examine wearing rings at regular intervals. When new, rings in the smaller size, more commonly used pumps should have a diametrical clearance of about 0.006 to 0.008 inch on cold liquid service, and about 0.010 to 0.012 on hot liquid service. When ring clearance becomes 0.020 to 0.030 inch on the diameter it is more economical to replace rings than to pay for power lost in leakage through them.

▸ Gritty liquid or foreign matter in liquid accelerates ring wear. If condition exists, provide intake end of suction piping with a suitable screen to filter out abrasive materials.

▸ Watch pump alignment. Excessive strains from suction or discharge piping can and do distort casing. Wearing rings protect pump from serious damage in this event by themselves taking the wear. However, *before* installing new rings, be sure to check into the *source* of distortion.

▸ Send for your *free* copy of "Handbook for Wartime Care of Centrifugal Pumps". This valuable booklet applies to *all* makes of pumps; contains *no* advertising. Contents include: tables of friction losses; guide to locating trouble; wartime maintenance schedule. ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WISCONSIN. A 1756

Wearing rings on Allis-Chalmers "Electrifugal" pumps are located on both sides of impeller — protecting casing and cover from wear. Their construction depends on the exact nature of the liquid to be pumped. They may be bronze, stainless steel, monel metal or other material with inherent ability to resist destructive action of a specific liquid.



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ALLIS-CHALMERS PUMPS

Allis-Chalmers builds all types and variations of pumps shown at right. Capacities from 10 to 150,000 gpm—heads to 2500 lbs.

SUN GREASE . . . Stops Dripping, Cuts Maintenance-Period From Every Day to Every Other Week

Lubrication of open gears of paper-making machines is a familiar problem in the paper industry. One manufacturer called in the Sun Engineer when he found that he had to lubricate gears and clean floors every day.

About seven tons of grease, of a nationally known brand, were being used every year on eight machines, and a considerable quantity went on the floors.

A special adhesive Sun grease, recommended by the engineer for its adhesive properties, was tried on the hundreds of gears of each machine. It stayed on! The gears now get proper protection, and have to be greased only once every two weeks. Floors stay clean.

Total savings of labor and materials have been about $2874 a year, and records show grease-consumption has been cut from 15,000 to 1,200 pounds. These savings are typical of the results being obtained by Sun Engineers and Sun lubricants in paper mills throughout the country.

Whatever the size or nature of your paper-making operations, Sun's quality line of oils and greases, plus the know-how of Sun Engineers, can help you to keep production up and costs down. Call in the Sun Engineer near you, or write direct to . . .

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